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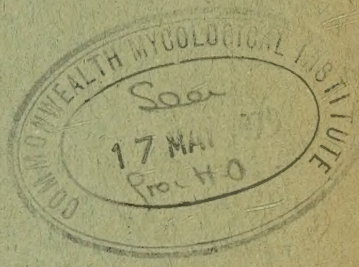
MAURITIUS

Annual Report
OF THE
Ministry of Agriculture
AND
Natural Resources
for the year 1975



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AUGUST 1977

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THE MINISTRY OF AGRICULTURE AND NATURAL RESOURCES
AND THE ENVIRONMENT

(Agricultural Services),
Reduit,
15th July, 1976.

SIR,

I have the honour to submit the Annual Report of the Agricultural Services for the year 1975.

I have the honour to be,
Sir,
Your obedient Servant,

B. D. ROY,
Chief Agricultural Officer.

THE HONOURABLE THE MINISTER OF AGRICULTURE
AND NATURAL RESOURCES AND THE ENVIRONMENT,
MINISTRY OF AGRICULTURE AND NATURAL RESOURCES
AND THE ENVIRONMENT,
PORT LOUIS.

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Annual Report of the Ministry of Agriculture and Natural Resources (Agricultural Services) for the year 1975

I. Introduction

1.01 In virtue of an order made by the Minister of Agriculture and Natural Resources on the 31st January, 1972, all the powers and duties exerciseable by the Conservator of Forests and the Chief Agricultural Officer have been transferred to the Permanent Secretary who then becomes the Chief Adviser to the Minister and the Chief Administrative Officer to the Ministry.

1.02 The Chief Agricultural Officer advises the Permanent Secretary on all matters referred to him—policy, administrative and technical. He is responsible for the planning, co-ordination and execution of the work of the different divisions of the technical services of the Ministry, which except for the Forestry Service, are grouped in the Agricultural Services. He is assisted by two Principal Agricultural Officers, Mr. K. Lutchmeenaraidoo was responsible for the co-ordination and implementation of the approved programme of work of the following divisions: Agricultural Division, Experiment Stations, Plant Pathology Division, Entomology Division, General Chemistry Division and Environment; Principal Agricultural Officer, Mr. T. M. Narain was responsible for the co-ordination and implementation of the programme of work of the Animal Production Division, the Livestock Breeding Stations, the Animal Health Division. The Dairy Chemistry Division, the Projects Division and the Engineering Division. The remaning divisions—namely the Arbitration and Control Board, the Extension Services, the Field Services, the Land Use Division and Rodrigues—were the direct responsibility of the Chief Agricultural Officer.

1.03 The Chief Agricultural Officer and the Principal Agricultural Officers also serve on a number of Boards and Committees either as Chairman or as members. These Boards and Committees are listed at Chapter II. They fall under the responsibility of the Ministry of Agriculture and Natural Resources and the Environment. They submit their own Annual Reports. This report deals with the work carried out by the professional, scientific and technical officers of the Agricultural Services. It does however, contain in a very abridged form a report on the state of the Sugar, Tea and Tobacco industries as these constitute our major agricultural industries.

1.04 The agricultural year 1975 was marked by the passage of cyclone Gervaise followed by cyclone Ines early in the year and by the conclusion of an A.C.P./E.E.C. sugar agreement.

1.05 Weather conditions early in 1975 for the sugarcrop were most favourable and the production was estimated at 690,000 long tons. Then cyclone Gervais hit Mauritius on the 6th February causing considerable damage to the standing crops. This was followed by cyclone Ines on the 16th March which although of moderate intensity added to the damage. After these two cyclones the weather was most erratic. All this resulted in an actual production of only 460,882 long tons, the lowest since cyclone Carol visited Mauritius in 1960.

1.06 Early in the year a new convention was sign with the 9 countries of the European Economic Community after protracted negotiations lasting over 18 months between the 46 states in Africa, the Carribean and the Pacific on the one hand and the European Economic Community states on the other. By this convention Mauritius obtained a quota of 500,000 metric tons out of an aggregate tonnage of 1.4 million tons white value for all the A.C.P. States. The price payable for our sugar was £260—C.I.F. 96° Polarization. It will be noted that the price in 1974 under the Commonwealth Sugar Agreement was partly £279 and partly £140.

1.07 The Tea Industry suffered not only from the effects of the two cyclones early in the year but also of strikes, shortage of labour resulting in unplucked plantations, shortage of fertilizers resulting from a breakdown at the local chemical fertilizer factory. Once again production decreased over the previous year, being 21% less than last year. The Tea Control Board has been replaced by the Tea Board which has been given wider powers than its predecessor as a result of a study made by a committee appointed by the Ministry on the problems facing the Tea Industry in 1974.

1.08 The Tobacco Industry also suffered from very unfavourable weather conditions. Cyclone Gervaise and later cyclone Ines caused damage to seed beds and to transplanted seedlings in the field as well as to the roof of curing barns and grading sheds. The cyclones were followed by drought conditions during the growing season and heavy rains at times of harvest. However, a fair number of producers had overhead irrigation facilities which made up for the low yields compared favourable with the previous year. The production was 801.684 metric tons compared to 774.890 metric tons in 1974. Imported leaf also increased to nearly 20% compared to about 10% the previous year. This increase of imported leaf had become necessary to replace leaf damaged by cyclones in the warehouse at the Tobacco Board.

1.09 Development of the Livestock industry is being given high priority. A feedlot capable of holding 512 head of cattle was constructed at Richelieu Experiment Station to assess the value of sugarcane and sugarcane by-products as a source of feed for fattening cattle in the course of the previous year. Towards the end of the year under review two new feedlots were started, one at Rchelieu Experiment Station and the other at Palmar Livestock Breeding Station, each capable of holding some 270 head of cattle, housed in cubicles, to assess the value of sugarcane and sugarcane by-products as the main source of energy for milk production and at the same time to experiment on other aspects of milk production with a view to improving milk quality. It is expected that by the end of the coming year these two centres will be operational.

1.10 The successful establishment of a livestock industry depends to a great extent on a reasonable measure of control over the biting stable fly. The stable fly project entered a new phase with the nomination by the F.A.O. of Dr. K. R. P. Singh of the Indian Council for Medical Research to assist the Ministry in feasibility trials for the eradication of *Stomoxys nigra.* Significant results have been obtained this year with larval parasites introduced from Uganda (as the reduction) of the fly's density is primordial for the success of the campaign. New and modern laboratory facilities have been erected for the mass breeding of the flies.

1.11 The preliminary trials for the production of silk in Mauritius have been completed. It is now known that high quality silk can be economically produced in most regions of the island, particularly in the humid zones. The cyclones "Gervaise" has shown that he low bush form of mulberry cultivations resists very well to high winds which only defoliate the plants. The development of sericulture has been intensified in October with he arrival of Mr. N. Ganesh of the Central Silk Board in Mysore, India. Mr. Ganesh, an expert Extension Sericulturist, will advise the Minisrty on the best ways of establishing sericulture as an industry.

1.12 With the high price of sugar, agricultural diversification is being envisaged in terms of interline cropping of sugarcane where soil and climatic conditions permit. This also requires adequate irrigation facilities to meet the needs of both crops. Much emphasis is therefore placed on the three major irrigation projects that have been started during the recent past. Work on the Northern Plains Irrigation Project which covers some 14,000 acres is proceeding satisfactorily, the main irrigation pipes are being laid down and necessary repairs are being carried out to the supply channel to the Nicoliere Reservoir. The planning of the Western Coastal Region Irrigation Project which covers about 16,000 acres is at a fairly advanced stage. It is hoped that the first phase of the Project can be implemented in the course of the coming year. Under the Small Wells Irrigation Project which makes used of the underground water, where available, for irrigation purposes in areas outside the two main irrigation projects, a number of minor projects had been identified and were being implemented.

1.13 The high price of sugar and of labour costs and the high margin between the producer price and the market price of locally grown foodstuffs and vegetables have contributed to make agricultural diversification more difficult. Cold storage facilities at the Marketing Baord will be extended and regional cold stores will be constructed to improve marketing with a view to stabilizing the supply of perishable foodcrops and vegetables. The guaranteed price for maize and paddy has been maintained on the market.

1.14 In the course of the year, the improvement in the staff situation recorded in the previous year was even more spectacular—no less than 8 Scientific Officer sand 28 technical officers in various disciplines were recruited.

II. Boards and Committees

2.01 The Permanent Secretary or his representative served on the following Boards and Commitees:

Agricultural Marketing Board

Board of Agriculture, Fisheries and Natural Resources

Board of Examiners for the Registration of Agricultural Chemists

Cane Release Committee

Foodcrops Insurance Committee

Irrigation Committee

Land Settlement Committee.

Mauritius Sugar Industry Research Institute Executive Board

Mauritius Sugar Industry Research Institute Advisory Committee

Sugar Millers Development Fund Committee

Sugar Planters Development Fund Committee

Sugar Industry Development Fund Committee

Sugar Insurance Fund Board

Sugar Planters Mechanical Pool Corporation Board

Tea Control Board (Restyled Tea Board as from August 1975)

Tea Development Authority

Tobacco Board.

III. Board of Agriculture and Natural Resources

3.01 The Board functions under Ordinance No. 29 of 1957. The following advisory committees were set up for specific purposes:

(b) The Cane Release Committee

(a) The Land Settlement Committee

(c) The Irrigation Committee.

3.02 The Board met once to approve the recommendations of the Cane Release Committtee.

3.03 The Land Settlement Committee met on one occasion. Its main business was the selection of suitable tenants. The question of rentals was also considered and new rentals were suggested.

3.04 The Cane Release Committee met on one occasion and decided that there should be no release in the year 1975 of any of the promising varieties.

3.05 The Irrigation Committee met regularly each month. It was concerned with the allocation of water for irrigation purposes from the Magenta Canal, La Ferme reservoir and Nicolière reservoir. After cyclone Gervaise, repairs were carried out on La Ferme and Magenta canals. The Committee was also concerned with the regulation of water flow from Tamarin Power Station to the Magenta canal, repair work on the Nicolière canal and work on Papayes feeder. The quantity of irrigation water allocated to water users depended on the supply situation in the reservoirs.

IV. Comité de Collaboration Agricole Maurice — Reunion — Madagascar

4.01 The twenty-third Conference of the Committee was held in Reunion Island from the 29th November to the 4th December 1975. Six delegates from Mauritius and four from Reunion attended the Conference. Some scientific papers were presented and visits to Experimental Stations were organized. The Committee also reviewed the programme of activities for the year 1975 and established the programme of activities for theyear 1976.

4.02 Two missions from Mauritius visited Reunion Island under the auspices of the *Comité de Collaboration Agricole.*

V. The Sugar Industry

Crops Results

5.01 Hurricane winds and excessive rainfall during 'Gervaise' have caused appreciable damage to the sugar canes affecting considerably the 1975 crops.

5.02 Hereunder are some of the crop results compared with those of 1974:

		1975	*1974*
Area cultivated (arpents)	...	204,677	205,431
Area reaped (arpents)	...	194,788	189,296
Cane Produced (metris tons)	...	4,316,115	5,963,655
Sugar Produced, metric tons 98.5° Pol	...	469,272	698,463
Tons of Cane per arpent (metric)	...	22.7	31.5
Tons of sugar per arpent (metric)	...	2.46	3.68
Yield of sugar per cent cane	...	10.85	11.68
Crushing rate, hourly metric tons	...	103.7	111.6
Crushing rate, daily metric tons	...	1,740	2,257

Cane Varieties

5.03 In order of importance, the main varieties making up the 1975 crop were the following: S. 17 (31%), M 13/56 (22%), M 377/56 (13%), M 93/48 (12%). These varieties accounted for 78 per cent of the crop. The raimaining 22 per cent were made up of M 351/57 (4%), M 31/45 (3%), M 202/46 (3%), M 438/59 (2%), M 124/59 (2%), M 442/51 (3%) and other varieties.

Quotas And Prices

5.04 The negociated price during the period 1st July to 30th June/75 under the Common Market Agreement for a quota of 500,000 metric tons was at the price of £260 per metric ton.

Exports

5.05 The exports of sugar were as ofllows:

Destination	*Long Tons*	
	1975	*1974*
United Kingdom ...	388,184	400,850
Canada	26,555	163,585
U.S.A.	23,100	39,420
Iraq	—	22,304
Iran	—	25,667
Indonesia	—	5,167
Sudan	—	12,000
Somalia	—	4,921
Burrundi	—	30
Seychelles	1,865	585
Afghanistan	21	—
Rwanda	591	—
Botswana	8	—

Apart from the sugar exported, there were 36,410 long tons consumed locally.

Molasses and Alcohol

5.06 The production of molasses for the crop amounted to 129,555 metric tons and the quantity exported during the calendar year was 121,186 metric tons. As in the previous years, molasses were used for the manufacture of rum and various alcoholic products. 3,813 tons of molasses were used for the preparation of cheap cow feed at St. Antoine at the request of the Ministry of Agriculture. Medine S. E. produced some 6,000 litres of vinegar whilst Solitude prepared a large variety of alcoholic products and perfumes.

VI. The Tea Industry

Tea Control Board

6.01 The Tea Control Board which was established under the Tea Control Ordinance No. 29 of 1959 and by proclamation came into force in February 1960, was replaced in July 1975 by the Tea Board established under the Industry Control Act No. 14 of 1975. The new Tea Board has more extensive powers to regulate all aspects of Production, Manufacture and Marketing of green leaf and made Tea.

Price of Green Leaf

6.02 The Board was given powers to fix the interim price to be paid for green leaf not only with regard to free planters but also for small holders of the Tea Development Authority and metayers. The price for green leaf during the year was as follows:

Period	*Category of Planter*	*Price per half kilo-gram of leaf*
1 January, 1975—31 March, 1975	Contractor/Planter	33 cents
1 April, 1975—30 Sepetmber, 1975	Contractor/Planter	37 cents
1 October, 1975—31 December, 1975	Contractor/Planter	38 cents
	Smallholder	36 cents
	Metayer	32 cents

6.03 The final price of green leaf payable by the different factories for the crop year, 1974 to 1975 was 42.0 cents per half kg for free planters, 44.5 cents for small holders of the Tea Development Authority and 36 cents excluding deductions for direct services provided by the estate, for metayers.

Production

6.04 The crop suffered from a set back due to cyclone Gervaise which hit the island in early February, at the peak of the flush season. Production also suffered due to strikes, shortage of labour, and shortage of fertilizers due to an accidental breakdown of the local chemical fertilizer factory. All these setbacks resulted in a decrease of production of 21.2% as compared to the previous year.

Tea Factories

Eight factories operated during the year. Their production for the last three years is given below:

TABLE 1

Production of Black Tea by Factories (1973—1975)

(Figures are given in kgs)

Factory	*1973*	*1974*	*1975*
Bois Cheri	750,291	692,125	659,616
Corson	269,009	279,820	233,753
Dubreuil	1,217,067	1,311,135	952,136
La Chartreuse	941,110	560,290	368,347
La Flora	438,781	453,500	295,825
Nouvelle France	189,726	370,793	374,852
Pont Colville	183,681	272,854	228,016
Tea Investment Ltd.	89,278	43,465	26,076
TOTAL	4,078,943	3,983,982	3,138,621

VII. The Tobacco Industry

7.01 The Board on the outlook of supply and demand, and the low carry over stocks of Manufacturers, determined to set the target of production for the crop year as follows:

Type		*Kilos*
Virginia Flue-cured	...	550,000
Amarello Air-cured	...	350,000
TOTAL	...	900,000

7.02 The equivalent acreage quota for production of above mentioned quantities was determned to be as follows:

Type		*Arpents*
Virginia Flue-cured	...	999
Amarello Air-cured	...	359

7.03 Some producers were hard put to achieve their quota because of difficulties to get land or to commit land to tobacco production in view of the attractive price of sugar cane. In face of mounting cost of production, it was determined to issue extra allocation to those registered producers who were willing to grow more than their allocated quota with a view to ascertaining that production would be commensurate to allocation.

ALLOCATION

7.04 The actual acreage and poundage quotas, on the basis of extra allocation to producers willing to grow more for compensation of eventual failure in production, issued for the crop year to all registered producers were as follows:

Type		*Arpents*	*Kilos*
Virginia Flue-cured	...	1,164	644,000
Amarello Air-cured	...	394	390,000
TOTAL	...	1,558	1,034,000

PRODUCTION

7.05 The total acreage planted during the crop year and the production achieved therefrom, compared to the previous year, were as follows:

		1974		*1975*	
		Acreage Planted Arpents	*Yield Kilos*	*Acreage Planted Arpents*	*Yield Kilos*
Virginia Flue-cured ...	...	959	488,617	1,036.59	541,688.6
Amarello Air-cured ...	...	317	286,273	358.08	259,995.4
TOTAL	...	1,276	774,890	1,394.67*	801,684.0*

*Excluding Experiment Stations

Crop Conditions

7.06 Cyclone Gervaise of 6th February caused damage mostly to early sown seed beds of several producers, to plantations of Virginia tobacco of one producer—Black River, to roof of curing Barns covered with iron sheets and to Air-curing and grading, sheds.

7.07 Weather conditions were variable during the different stages and were not favourable for successful tobacco production. Following Cyclone Gervaise producers had difficulties in raising seedlings because of the actual high soil moisture content, which worsened by the succeeding Cyclone Ines in March and which brought heavy rains, transplanting was done when there was no rain which resulted in many casualties and unevenness in plantations. Little to no rain fell during growing stage and growth suffered. Producers of Virginia tobacco equipped with overhead irrigation facilities achieved advantageous production. Much rain during a few days in June at harvesting stage caused damage by waterlogging conditions to plantations of Virginia tobacco in two localities of the district of Flacq.

7.08 The successive months till November became dry and windy. In general Amarello tobacco made slow growth as the expected rain did not come in time for recovery.

Insect Pests and Diseases

7.09 Leaf eating caterpillars (Heliothis) were the main pests causing extensive damage in spite of the regular spray of Methomyl (Lannate) or Azodrin.

7.10 Symptoms of mosaic disease were found on scatterred plants of Virginia and Amarello tobacco. There were found cases of Bacterial wilt in fields of Amerello tobacco in Flacq.

Yields and Returns

		Average Yield/Arpent	
		1974	*1975*
		Kilos	*Kilos*
Virginia Flue-cured	...	514	525.3
Amarello Air-cured	...	900	728.5
		Average Return/Arpent	
		1974	*1975*
		Rupees	*Rupees*
Virginia Flue-cured	...	5,868	6,444.18
Amarello Air-cured	...	5,031	4,046.82
		Average Value/Kilo	
		1974	*1975*
		Rupees	*Rupees*
Virginia Flue-cured	...	11:41	12:26
Amarello Air-cured	...	5:56	5:55

7.11 The quality of Virginia Flue-cured tobacco was superior and that of Amarello Air-cured tobacco was inferior to that of the previous year.

PERCENTAGE OF BRIGHT AND MEDIUM GRADES

	1974	*1975*
Flue-cured	79	87.24
Air-cured	35	34.21

1975 (CALENDAR YEAR)—LOCAL MANUFACTURE

7.12 The Manufacturers' purchases and usings of domestic and imported leaf, during the calendar year, were as follows—

1975—PURCHASES

Domestic Leaf Kilos	*Imported Leaf Kilos*	*Total Kilos*	*% Total Imp.*	*Value/Kilo Domestic* Rs	*C.I.F. Imp.* Rs
650,597.6	7326,88	914,484.6	28.8	12.55	18.74

1975—USINGS

	Domestic Kilos	*Imported Kilos*	*Total Kilos*	*% Total Imp*
B.A.T. Co. Mts. Ltd. ...	580,075.000	144,139.000	724,214.000	19.9
A.T.C. Mts. Ltd.	105,046.600	24,815.646	130,862.246	18.9
TOTAL ...	686,121.600	168,954.646	855,076.246	19.8

1975

7.13 The percentage of imported leaf used in manufacture increased by 10.2 per cent in 1975 compared to 1974 as illustrated in the following table. The increase of imported leaf was due to special permission given to manufacturers to import leaf, to replace domestic leaf damaged by Cyclone Gervaise, at the same excise rate as applicable to leaf of local production.

	Year	
	1974	*1975*
% imported ...	9.6	19.8

7.14 The average C.I.F. value of Imported Virginia leaf was Rs 18.74 per kilo compared with Rs 14.89 per kilo for Domestic Virginia leaf.

7.15 The average value of Amarello air-cured leaf was Rs 8.27 per kilo.

7.16 Imports of leaf and cigarettes for the last two years are tabulated below—

	1974		1975	
	Kilos	*Value* Rs	*Kilos*	*Value* Rs
*Cigarettes ...	12,804	429,871	14,715	642,339
Leaf				
U.S.A. ...	114,358	2,643,212	79,120	2,490,252
Other Sources ...	15,097	147,088	184,767	2,455,577
Total leaf ...	129,455	2,790,300	263,887	4,945,829
GRAND TOTAL ...	142,259	3,220,171	278,602	5,588,168

7.17 Comparatively with last year usings of domestic leaf have decreased Kgs. 38,268.900 and those of imported leaf have increased by Kgs. 92,004.907 representing a net increase of Kgs. 53,736.007.

VIII. The Cane Planters & Millers Arbitration and Control Board

HEAD OF DIVISION A. A. AUMEERALLY, GENERAL MANAGER

8.01 The Board operated under "The Cane Planters and Millers Arbitration and Control Board Act (No. 46) of 1973". The executive machinery of the Board was run as a division of the Ministry of Agriculture and Natural Resources and the Environment.

MEETING OF THE BOARD

8.02 The Board held 16 meetings during the year as follows:

3 meetings in connection with the assessment of sugar to planters;

1 meeting in connection with the protests against assessment of sugar;

12 meetings in connection with change of factory areas, redelimitation of factory areas—core sampling—bagasses and scums—automatic weighbridges.

CANE TESTING

8.03 The canes supplied by 444 planters or groups of planters were tested separately. The total number of tests carried out was 83,974 out of which 63,677 have been obtained by use of core sampling equipment on nine sugar factories. This new sampling technique will be introduced in the 1976 crop on the other remaining sugar factories.

ASSESSMENT OF SUGAR

8.04 Following the publication of the final assessment of sugar to planters for the 1974 crop, 7 cooperative credit societies and 3 groups of planters lodged protests against the awards made by the Board Following the hearing of the protests, the Board maintained its previous assessment in all cases.

*Imported Cigarettes are for use by H.M.S. Mauritius and as Ships' Stores.

Transport Costs

8.05 The final assessment of Road Rates for the 1974 crops was issued in August, 1975. The approved rates were as follows:

(1) Millers were entitled to claim Rs 2.80 for the first ton mile and 0.32 cs each additional ton mile in respect of canes transported from outlying weighbridges to factories. The maximum mileage claimable was 4 miles.

(2) Planters who had themselves caused their canes to be delivered to factories were entitled to a refund of .32 cs per ton mile for each mile over and above a distance of four miles.

Delimitation of Factory Areas

8.06 2 applications for change of factory areas were received by the Board. The status quo was maintained in both cases. As the Board was examining the question of redelimitage the boundaries on sugar factories a sub-committee was set up to examine the delimitation of factory areas so as to have more natural and physical boundaries as possible and also to include planters, who were enduring certain hardships, in appropratie factory areas. Five new delimitations of factory areas are ready and will be published in the Government Gazette. According to the Cane Planters and Millers Arbitration and Control Board Act, a delay of 21 days will be granted for appeal.

Permits to Middlemen

8.07 Permits were issued to 28 middlemen for the crop.

Complaints against Middlemen

8.08 There were eleven complaints made by planters against middlemen. In all cases the Board has been able to settle the disputes between the parties.

Cane Contracts

8.09 There were 9,848 cane contracts registered by the Board, covering some 30,000 planters.

The number of planters who failed to enter into contract before the 31st May totalled 770. In 1974 the number was 495.

Cane Varieties

8.10 During 1975 the varieties approved for planting were the following:

B 37161	M 253/48
B 37172	M 409/51
B 51129	M 442/51
E 1/37	M 13/53
E 50/47	M 356/53
M 134/32	M 13/56
M 134/32 striped	M 377/56
M 134/32 white	M 351/57
M 31/45	M 124/59
M 202/46	M 438/59
M 93/48	N Co 376
M 99/48	S 17

Control of Weighbridges

8.11 The number of weighbridges in operation was 80. All the weighbridges were tested for accuracy prior to the beginning of the crop. 7 were found to be incorrect on first examination, one on 2nd examination and had to be re-tested. All weighbridges were again tested for accuracy on two occasions during the crop. By 1976 crop all weighbridges where more than 5000 tons have been delivered during 1975 will be automatic with visual indicators, recording and printing devices.

Surprise Checks carried out at Weighbridges during the Crop

8.12 During the crop, 3621 surprise checks were carried out and 3515 vehicles were reweighed. (3255 lorries and 260 carts).

IX. Agricultural Division

Head of Division: Dr. A. L. Owadally, Divisional Scientific Officer (Agronomy)

Scientific Officer: P. P. Vyapoory

Rice (Oryza sativa)

9.01 Rice experiment carried out in the preceeding year at Queen Victoria, Flacq were repeated for the two planting seasons of 1975.

First Season—January to June

9.02 In the variety trial to compare the yield of six varieties, none was found to outyield the control variety 1R 532-208 which yielded 5.3 metric tons/hectare.

9.03 Three fertilizer trials A, B, and C were carried out using variety IR 532-208.

9.04 In trial A, the application of potassium was basal, that of phosphorous was non-limiting and nitrogen was applied at the following levels: N_0=0Kg N/ha, N_1=50kg N/ha, N_2=100kg N/ha, N_3=150kg N/ha, N_4 =200Kg N/ha. There was no significnat difference in yield of paddy among the various treatments. The treatment N_3 (150kg N/ha) gave 6.3 metric tons/ha which was the highest yield and treatment N_1 (50kg N/ha) gave 5.6 metric tons/ha which was the lowest yield.

9.05 In trial B, the application of potassium was non-limiting, that of phosphorous was basal and nitrogen was applied at the same levels as in A. Treatments N_2 (100kg N/ha) and N_0 (0kg N/ha) gave 4.9 tons/ha and 3.4 tons/ha tons of paddy respectively being the highest and the lowest yield. No significant difference in yield among the treatments was noted.

9.06 In trial C both potassium and phosphorous were applied in non-limiting amounts and nitrogen was applied at the same levels as in trials A. No significant difference in yield was obtained between the treatments.

Second Season—July to December

9.07 In the variety trial, again the control variety IR 532—208 outyielded the other varieties though difference in yield figures was not significant. Varieties IR 532-9334 and IR 665-6291 yielded 9.3 and 9.5 metric tons/hectare for IR 532-208. Variety 63-83 gave the lowest yield 5.7 metric tons/hectare.

9.08 In fertilizer trial A, very high significant difference in yield was obtained. The optimum level of nitrogen application was N_2 i.e. 100 Kg N/ha. The mean yield for this level of application of introgen was 10.7 metric tons/ha.

9.09 In fertilizer trials B and C, no significant difference in yield was obtained. The yield figures did not exceed 7.2 metric tons/ha for trial B and 9.0 metric tons/ha in trial C.

Soyabean (Glycine max)

9.10 Two variety trials, forming part of the International Soybean Variety Evaluation Experiment, (INTSOY) organized by the University of Illinois, Urbana, U.S.A., were in progress. The experiment was designed to test the adaptation of soybean varieties under a wide range of environmental conditions.

9.11 One trial was planted at Central Experiment Station on 2nd October and the other at Pamplemousses Experiment Station on 6th October, At both sites, the same 15 varieties were being compared except that at Central Experiment Station one variety was replaced by the "local" variety.

9.12 These experiments were being carried out with the collaboration of the Plant Pathology, Entomology and Chemistry Divisions. It appeared that the varieties had different growth habits. In general the dwarf types were the earlier maturing varieties while the late maturing ones grew tall and had much vegetative growth. No preventive control of diseases was done in order to observe the susceptibility of each variety to the various diseases affecting soyabean. As regards insect control. 'Prodan' was used against cutworms. The experiment at Central Experiment Station suffered some damage caused by cutworms. 'Lannate' was used against "leaf tiers" and other caterpillars. The early maturing varieties would be ready for harvest in January 1976.

Scientific Officer: C. G. Pallany

Tobacco (Nicotiana tabacum L)

Variety Trials

9.13 In the first season of 1975—January to July—a variety trial comprising four flue-cured varieties namely N.C. 95, S.C. 66 and S.C. 71 from U.S.A. and the control variety, Yellow Mammoth was carried out at Pamplemousses Experiment Station. Variety S.C. 66 was found to give the highest yield which was 10,048 kg per hectare but there was no significant difference in yield of cured leaves between varieties N.C. 95 and S.C. 66. However, a highly signifiacnt difference (P=0.01) existed between the yields of N.C. 95 and S.C. 66 and those of Yellow Mammoth and S.C. 71.

9.14 Owing to cyclones Gervaise which had seriously affected the plants, very few leaves could be harvested for curing and hence the weight of cured leaves was not recorded. Incidence of black shank was insignificant in that season whereas incidence of bacterial wilt was found to be severe Variety S.C. 71 was as susceptible as the control variety Yellow Mammoth. Variety N.C. 95 was the least infected variety and was significantly more resistant (P=0.01) than any of the other three varieties.

9.15 In the second season i.e. from August to Decmeber, another variety trial was conducted at Richelieu Experiment Station with the following eight varieties: N.C. 95, S.C. 66, S.C. 71, S.C. 72, Coker 347, Speight G 28, Speight G 33 and Yellow Mammoth ,the last being the control. Alhough Variety N.C. 95 gave the highest yield which was 7,474 kg per hectare, there was no significant difference between the varieties. It was observed that Yellow Mammoth was the most susceptible variety to Nematode infestation but no significant difference existed in the degree of infestation between the varieties.

Fertilizer Trial

9.16 A latin square experiment was designed to determine the optimum level of nitrogen (N) to maximise gross returns of one flue-cured variety, N.C. 95. In this experiment carried out at Pamplemousses Experiment Station in the first tobacco season—January to July—five treatments were tested. These were N_0=0kg N/ha, N_1=15kg N/ha, N_2=30kg N/ha, N_3=45kg N/ha, and N_4=60kg N/ha. Although N.C. 95 is known to be a tolerant variety, all the plots were severely attacked by bacterial wilt and the experiment had to be abandoned.

9.17 The experiment was repeated in the second season—August to December at Richelieu Experiment Station without any modification. 100 kg of P_2O_5 in the form of Triple Superphosphate and 100 kg of K_2O in the form of Sulphate of Potash per hectare were also applied. Treatment N_2 i.e. at 30 kg N/ha gave the highest production of green leaves which was 15,536 kg/ha. There was no significant difference in yield between treatments N_2 and N_3 or N_4. The yield at N_2 was significantly higher than N_1 or the control N_0.

Planting Date Experiment

9.18 An experiment to determine the best planting date was carried out in the first season of the year and repeated in the second season. Each experiment was of a randomized block design with five treatments and four replicates. The treatments were sown at fifteen days intervals. In the first season the first sowing was on 21.2.75 and in the second season on 15.8.75. Best results in terms of yield of green leave were obtained with treatment P_4. In both seasons, there was no significant difference in yield of green and cured leaves between the treatments.

Tobacco Breeding Experiment

9.19 This is a continuation of an experiment which started in 1971. The objective was to cross two flue-cured varieties N.C. 95 and Yellow Mammoth so as to obtain a variety that would produce good quality leaves and would be at the same time resistant to bacterial wilt. Seedlings planted at Richelieu Experiment Station were damaged by cyclone "Gervaise" in February 1975. The breeding lines were sown again at Pamplemousses Experiment Sation and transplanted in April. Twenty seven plants were selected, selfed and bagged. About a dozen were retained and their seeds sown at Richelieu and at Pamplemousses Experiment Stations. Thirteen lines including five parental lines (N.C. 95 and Yellow Mammoth) were planted in Ocober. Three plants were selected at Pamplemousses Experiment Station and about 60 plants at Richelieu Experiment Station. Some selected lines at Richelieu Experiment Station were destroyed by hooligans and the bags for seed collecton were stolen. Seeds from four plants only were collected at Richelieu and from three plants at Pamplemousses.

Seedrate Trial

9.20 The first trial was damaged by cyclone "Gervaise". A second trial was sown at Richelieu Experiment Station in March. Germination was rather poor. Nevertheless it was observed that one gram of seeds per bed of 9.3 m^2 (or 100 ft^2) was adequate.

Seed Production

9.21 Selection was carried out in tobacco plantations at Richelieu Experiment Station. The number of plants that were selected, selfed and bagged was as follows:

Yellow Mammoth	...	505
S.C. 66	...	205
N.C. 95	...	511
Amarello	...	100

SCIENTIFIC OFFICER—M. RAMTOHUL

Garlic (Allium sativum L.)

OPTIMUM TIME OF PLANTING TRIAL—VARIETY FENG SHAN SELECTION NO. 1

9.22 A trial was planted at Central Experiment Station with the combined purpose of multiplying the amount of planting material available and to determine the optimum time of planting of Feng Shan selection No. 1 which was introduced from Taiwan in 1973. The yield and grade of bulbs are summarized as follows:

TABLE 1

YIELD AND GRADE OF GARLIC

Treatment	*Yield of bulbs m. tons/ha*	*% of grade I* bulbs Produced*	*Crop Cycle (days)*
15th May 1975 ...	9.02	42.99	161
30th May 1975 ...	7.71	33.21	153
15th June 1975 ...	5.23	32.73	146
L.S.D. 5% ± ...	0.97	7.056	
L.S.D. 1% ± ...	1.38	10.04	

9.23 The above table shows that the cloves planted in the first half of May gave significantly higher yields and better bulb quality. With the availability of planting material, the subsequent trials will be modified to include two more planting dates i.e. 15th April and 30th April.

VARIETY FENG SHAN SELECTION NO. 2

9.24 2.30 kg of dry bulbs of variety Feng Shan selection No. 2 were available for multiplication. An area of 58.8 m^2 was planted at Plaisance Experiment Station on the 22nd of May, 1975. The fresh yield of bulbs harvested on the 31st October was 32.45 kg which is equivalent to 5.52 metric tons/ha. Owing to the limited quantity of planting material available, all the cloves irrespective of size were used planting and consequently the yield of bulbs was rather low.

SPACING TRIAL

9.25 A spacing trial on garlic from Rodrigues was conducted at Plaisance Experiment Station from May to October 1975 to study the effects of four row spacings on the yield and grade of bulbs. The results are summarized in the following tables.

TABLE 2

YIELD AND GRADE OF GARLIC

Treatments	*Seed rate kg of bulbs/ha*	*Yield of bulbs tons/ha*	*% of grade I* bulbs produced*
7.5 × 7.5 cm ...	1,300	7.71	3.20
7.5 × 15 cm ...	650	7.77	14.63
7.5 ×22.5 cm ...	413	7.35	29.73
7.5 × 30 cm ...	300	6.30	47.54
L.S.D. 5% ±		N.S.	10.42
L.S.D. 1% ±		N.S.	14.58

*Grade 1 — bulbs above 1 in. in diameter

*Grade 2 — bulbs less than 1 in. in diameter

9.25 There was no significant difference in yield between the treatments. However the quality of the bulbs produced improved as the row spacing was increased. Considering the economics of production, treatment 7.5×22.5 cm i.e. at seed rate of 413 kg/ha will give the highest return.

9.27 *Observations on moisture loss and keeping quality of bulbs of Feng Shan selection No. 1 and Feng Shan selection No. 2.*

TABLE 3

MOISTURE LOSS OF GARLIC BULBS

	Feng Shan Selection No. 1		*Feng Shan Selection No. 2*	
Days from harvest	*wt. of bulbs (kg)*	*Moisture loss (%)*	*wt. of bulbs (kg)*	*Moisture loss (%)*
0	1.5	—	4	—
39	9.6	36.0	2.5	37.5
71	9.5	36.7	2.4	39.5
155	8.8	41.3	2.3	42.5
184	8.6	42.7	2.3	42.5
217	8.5	43.3	2.3	42.5

9.28 After harvest, the bulbs of both varieties which were less than 1″ in diameter were kept on wire netting under good conditions of ventilation in a store room at Barkly Experiment Station. The figures show that there is a loss of about 42-43% in weight from harvest to time of next planting of garlic bulbs over a period of nine months i.e. from September to May.

FERTILIZER TRIAL

9.29 A fertilizer trial in garlic from Rodrigues was conducted at Plaisance Experiment Station to study the effects of four levels of Nitrogen at the rates of 25 kg N/ha, 50 kg N/ha, 75 kg N/ha and 100 kg N/ha on the yield of bulbs. The plants were adversely affected by the high acidity of the soil. The plant stand was very sparse and the trial was abandoned.

ONION *(Allium cepa L.)*

9.30 A factorial fertilizer trial on onion March Setts of the local variety was carried out in March 1975 at Palmar Experiment Station. The treatment were three levels of K_20 viz:

1. 0 kg K_20/ha
2. 40 kg K_20/ha and
3. 80 kg K_20/ha

and 4 levels of Nitrogen in the form of ammonium sulphate viz:

1. 0 kg N/ha
2. 30 kg N/ha
3. 60 kg N/ha

There was no significant difference in the yield of bulbs between the treatments.

Ginger *(Zingiber officinale Roscoe)*

9.31 A spacing trial on ginger at Plaisance Experiment Station included the treatments 22.5 cm×22.5 cm, 30 cm×30 cm, 37.5 cm×37.5 cm and 45 cm×45 cm in a randomized block design with five replicates. The trial was planted in December 1974 and the plants were seriously damaged by cyclone Gervaise.

Peas *(Pisum sativum)*

9.32 A variety trial to compare the green pea and green pod yields of four varieties of peas was carried out at Plaisance Experiment Station from May to August 1975. The results are summarised in table 4.

TABLE 4

Performance of four pea varieties

Varieties		*Yield of green peas Kg/ha*	*Yield of green pods Kg/ha*	*Shelling %*
Local	...	1807.41	3177.77	56.88
Ajax	...	2177.48	4377.77	49.74
Chinese	...	940.74	1525.93	61.65
Greenfeast	...	2444.44	4703.70	51.97
L.S.D. 5% ±	...	290.19	795.78	
L.S.D. 1% ±	...	494.74	1113.35	

9.33 The variety local gave significant higher yields of both green peas as well as green pods than the Chinese variety but significantly lower yields than Ajax and Green Feast.

French Beans *(Phaseolus vulgaris)*

9.34 A variety trial was conducted at Richelieu Experiment Station from July to October 1975 .The purpose of the trial was to compare the yield, agronomic characteristics and the disease susceptibility of ten varieties of dwarf french beans. The following varieties from Barkly Experiment Station were used.—Local Red, Pioneer, Victory, Long Tom, Superproduction, Prince, Redland Green Leaf, Deuil de Precoce, Fin de Bagnol and Pinto.

TABLE 5

YIELD OF TENDER PODS

Variety	*Metric tons/ha*
Local Red	17.77
Superproduction	21.67
Fin de Bagnol	14.12
Red Land Green Leef	15.39
Victory	16.69
Pioneer	18.59
Long Tom	23.22
Prince	16.94
Pinto	22.57
Deuil de Precoce	16.25
L.S.D. 5% ±	5.03
L.S.D. 1% ±	6.79

9.35 The variety Long Tom gave significantly higher yields than the Local variety. The varieties Superproduction, Red Land Green Leaf and Prince which showed infection with haloblight—a seed borne disease—should not be used for seed production at Barkly Experiment Station. Although, the variety Pinto was a high yielding variety, it produced small and flat pods of low commercial value. Similarly Deuil de Precoce produced unattractive pods with a purplish mottle.

SQUASH *(Cucurbita pepo)*

9.36 The following varieties of squash were transplanted in observational plots at Curepipe Experiment Station on the 14th October, 1975.

1. Golden Custard (Local)
2. Benning's Green Tint Scallop
3. White Bush Scallop

9.37 The seeds of Golden Custard were obtained from Barkly Experiment Station and the other two were imported from U.S.A. The results of the above trial are tabulated as follows:

TABLE 6

CROP CYCLE AND YIELD OF THREE SQUASH VARIETIES

Variety	*Grop cycle (day)*	*No. of days td 50% flowering*	*No. of fruits per plant*	*N . of marketable fruits/ pia t*	*Marketahle yield of fruits m. tons/ha*
White Bush scallop ...	91	51	10	6	52.73
Golden Custard ...	91	47	10	6	33.68
Benning's Green Tint Scallop ...	91	41	13	5	42.07

9.38 The varieties White Bush Scallop and Benning's Green Tint Scallop produced higher yields than Golden Custard because at prime picking their fruits had a diameter of 10 cm as compared to 7.5 cm for Golden Custard. The introduced varieties gave fruits which were very uniform in shape whereas those of Golden Custard were not. All three varieties had a mild attack of squash mosaic towards the end of the harvesting period. Inflected plants produced small fruits and in case of the Golden Custard variety the fruits were discoloured and showed mottling of yellow and green.

9.39 The trial will be repeated in the winter season at different localities.

CUCUMBER—*(Cucumis sativis L.)*

9.40 The following varieties of cucumber were transplanted in observational plots at Central Experiment Station in Reduit and at Plaisance Experiment Station:

1. Local
2. Palomar
3. Poinsett

9.41 The seeds of the last two varieties were introduced from U.S.A. and seeds of the Local variety were obtained from Barkly Experiment Station.

9.42 At both stations, the crops suffered from lack of irrigation water during the critical periods of growth i.e. from the active vine growth stage up to maturity of fruits.

9.43 The trial was planted at Central Experiment Station with a view to have better yield figures under optimum conditions of water availability. However, extreme drought conditions prevailed from the establishment of the plants till harvest. The number of fruits produced were as follows:

TABLE 7

NUMBER OF FRUITS PRODUCED BY CUCUMBER VARIETIES

Variety	*Number of fruits/plant*	
	Central E.S.	*Plaisance E.S.*
Palomar ...	11	5
Local ...	4	1
Poinsett ...	11	5

PUMPKIN—*(Cucurbita maxima)*

9.44 The following varieties of pumpkin were transplanted in observational plots at Plaisance Experiment Station and at Central Experiment Station in Reduit:

1. Local
2. Small Sugar
3. Butter Large Strain

9.45 Variety Small Sugar was imported from United States of America and Butter Large Strain was introduced from Australia. At both Stations the varieties Small Sugar and Butter Large Strain were severely infected with cucumber mosaic disease. Their fruits were distorted, malformed and did not reach a marketable size.

SCIENTIFIC OFFICER: K. F. LAN CHOW WING

9.46 Trials were begun with the following vegetables: Lettuce, Spinach, Leek, Tomato, Okra, Egg-plant and Sweet Pepper.

LETTUCE *(Lactuca sativa L.)*

9.47 Four newly imported varieties namely Batavia Pierre Benite, Grosse Blonde Paresseuse, Blonde de Cazard and Blonde de Laeken, were compared with the local grown Mignonette at Barkly Experiment Station, where they were transplanted on 30th May. The new varieties, except Blonde de Laeken, did not head well. Mignonette however produced a good compact head and was the earliest to reach marketable stage

9.48 A spacing of 30 cm. by 30 cm. was used and it was observed that Mignonette having a smaller diameter could have been grown much closer, with a consequent increase in yield.

TOMATO *(Lycopersicon esculentum Mill)*

9.49 Thirteen varieties were transplanted to Richelieu Experiment Station in July with a view to assessing their yield and resistance to pests and diseases. The varieties and their corresponding yields obtained were as follows:

Variety	*Marketable Yield in metric tons/hectare*
1. Heinz 1370 ...	... 31.6
2. Heinz 1350 ...	... 32.3
3. Regina (hybrid) ...	... 42.3
4. Venus ...	... 30.0
5. Saturn ...	... 22.5
6. St. Pierre ...	... 25.7
7. Moneymaker (local)	... 38.1
8. Marglobe (local)	... 25.8
9. E.S. 24 ...	... 27.2
10. Marianne ...	... 26.2
11. Marmande ...	... 33.7
12. Geante Kaki ...	... 20.9
13. Anahu ...	... 30.3

Moneymaker showed a comparatively good resistance to attack by various caterpillars and also had the least number of fruits with blossom-end rot. Varieties Heinz 1370, Heinz 1350 and Anahu also had tolerance to blossom-end rot.

9.50 At Pamplemousses Experiment Station, Venus and Saturn proved to be very satisfactory in a field highly infected with "bacterial wilt", *Pseudomonas solanacearum*. The remaining varieties all succumbed.

9.51 Due to drought at several stations, it was not possible to repeat the trials in the summer months.

Leek *(Allium porrum L.)*

9.52 Giant Carentan, a variety imported from France, was sown and transplanted to Curepipe Experiment Station and Barkly Experiment Station in August.

Spinach *(Spinacia oleracea L.)*

9.53 Two varieties, Winter Giant and Viroflay Giant were sown to assess their performance and suitability for cultivation in our climate.

9.54 Seeds were sown in beds at a spacing of 30 cm. by 20 cm. at Central Experiment Station (Reduit) and Curepipe Experiment Station in May. After germination the seedlings were thinned to two per hole. Fertilisers were applied as follows (per hectare):

250 kg Ammonium sulphate (total of three dressings)
200 kg Triple superphosphate
150 kg Muriate of potash
30 m. tons FYM

9.55 A first harvest was made seven weeks after sowing. After a further five weeks another harvest was effected, giving a total yield at Central Experiment Station of 39 metric tons per hectare of bed area, for both varieties.

9.56 A second sowing, in summer, yielded only 6 tons at the same station.

9.57 At Curepipe Experiment Station neither varieties grew well in winter or summer, possibly because of the too acidic soil and poorly-drained land.

9.58 Beds had to be drenched with a solution of Lannate against cutworms, as Prodan proved to be ineffective.

9.59 It may be pointed out that the above spinach is not the same as the locally grown "New Zealand" spinach, *Tetragonia expansa*.

Okra *(Abelmoschus esculentus (L.) Moench)*

9.60 Four varieties of okra were transplanted in October to Pamplemousses Experiment Station to compare their yield and other agronomic characteristics. These varieties were:

1. Clemson's Spineless
2. Perkin's Spineless
3. Indian
4. Local (from Barkly Experiment Station)

9.61 Although harvest will not be completed until next year, results so far showed Perkin's Spineless to have a better yield than the local variety.

9.62 Small quantities of seed of eight additional varieties were received from the International Institute of Tropical Agriculture, Nigeria, and were being multiplied.

Egg-Plants *(Solanum melongena L.)*

9.63 Six varieties of egg-plant, namely: Black Long, Purple Long, New York Spineless, Valencia Black Round, Farcie and Cipaye Narain, were planted at Pamplemousses Experiment Station in October, in a field infected with "bacterial wilt", *Pseudomonas solanacearum*. All varieties suffered from the wilt, the local Cipaye Narain showing a slight tolerance. Harvest would be completed early next year.

Sweet-pepper *(Capsicum annum L.)*

9.64 Two new imported varieties, Keystone Resistant Giant and California Wonder were being compared to the local varieties Dunputh and Chinese Giant. Transplanting occured on 13th November at Central Experiment Station and harvest started on 30th December.

Scientific Officer: H. Rojoa

Tea *(Camellia Sinensis)*

Clonal Selection

9.65 Selection of clones was carried in two new fields—7A and60B. In field 7A, out of a population of 28,800 plants, 3,000 plants were selected by visual assessment. After pruning to a height of 25 inches, the number was reduced to 1,500. The second selection was based on the healthiness of the plants i.e. free from pests and diseases and good expansion of frame. When the tea plants flushed, a third primary selection was done. Only plants with vigourous and rapid vegetative growth were selected and the number was reduced to 250.

9.66 Field 60B (observation Block) where there is a multitude of plants of unknown variety, had also been chosen for selection. Procedure was the same as described above. 58 plants were chosen during visual selection out of a population of 1100. After pruning and flushing ,33 were discarded and 25 were retained.

Chloroform Test

9.67 6,954 chloroform tests were carried out during the year 1975. Those tests included work on the new selected fields and previous work in field 4.

9.68 In field 4, leaves of 320 plants were subjected to chloroform test. It amounted to 4,464 tests. After the third round of tests, which ran from December, 1974 to April, 1975, 241 bushes were rejected and the remaining 79 bushes were pruned on 30th April, 1975 to a height of 16-17 inches for rooting trial, which took place in October, 1975.

9.69 Chloroform tests of 25 selected plants in field 60B started on 20th November, 1975 and terminated on 25th November, 1975. 450 tests were carried out; 16 clones were discarded and 9 left for manufacture and rooting trial.

9.70 In field 7A, chloroform tests of 250 selected tea bushes were in progress. Started on the 28th November, 1975, 3,480 tests had been carried out. A third round was left to be completed.

Rooting Trial

9.71 Rooting trial of clones in Field 3 was to be carried out in March 1975 but during cyclone "Gervaise" in February 1975, the materials were damaged. Consequently, the clones were pruned at 25 inches in height with a view to obtaining materials for rooting trials, which took place on 15th October, 1975. 21 bushes were put under trial while 3 clones (clone 350, 357 and 354) could not be included because materials for rooting trial were not available from them. In all, 735 cuttings from field 3 were planted. Similarly, rooting trial was carried out in field 6 in January, 1975, but the experiment was spoiled during the cyclone "Gervaise" in February. The selected clones were pruned to 25 inches in height and put under trial again on 15th October, 1975. It amounted to 1305 cuttings.

9.72 Further rooting trials were carried out in Field 4, where 77 bushes were selected. 72 were subjected to rooting trials on 17th November, 1975; two were discarded on account of borer attack *(Neotermes howa-Wasmann)* and 5 other clones (clones 5, 74, 132, 134 and 238) did not give good materials to put under rooting test. A total of 3,495 cuttings were planted from that field.

9.73 On the whole, a total number of 5,535 cuttings were put under trial for the year 1975. The cuttings were planted in polythene bags filled with composted soil. East African clones, too, were put under rooting trial on 8th January, 1976.

Manufacture

9.74 Out of 145 samples manufactured, only 24 fetched a better price than VP 1H, the standard clones (control). It is interesting to note that clone 0B 4 in field 6 0B was evaluated at Rs 20.00 per kg.

Grafting

9.75 On 15th January, 1975, 10 scions of clone 21 were grafted on rootstocks at Wooton Experimental nursery. Unfortunately, the grafts were damaged by cyclone "Gervaise". Grafting was repeated on 23rd September, 1975, using scions from Reunion Island No. 5, 19 and 111 on rootstocks at Reduit Seed Garden. None survived.

Experiments on Tea Agronomy

9.76 Seven experiments were in progress at Wooton Experiment Station, Curepipe on the various agronomic aspects of tea plants. Experiment VI AGR/15F/V/71/75 which was to determine the optimum pruning height, was cancelled on 8th June, 1975. It consisted of 2 treatments pruning at 24 in. and 30 in. with 4 replicates. Experiment VI was a replicate of Experiment VIII. The latter had 4 treatments which were 24 in., 26 in., 28 in., and 30 in. pruning height.

9.77 Experiments II, III, and X had completed their 1st phase of 3-year-cycle while experiment VII, whose objective was to find the best month of prune, would complete its 1st cycle of 3 years by the end of February, 1976.

9.78 The objective of Experiment II AGR/15B/V/71/75 was to determine the effect of yield on the split application of nitrogen, the rate of nitrogen remaining constant. The treatments were as ollows:

Treatment	*Time of application*	*Rate of lb N/Arpent*
T_1—one application ...	Mid—September	190 lb N/Arp.
T_2—2 split applications ...	Mid—August	95 lb N/Arp.
	Dec/Jan.	95 lb N/Arp.
T_3—3 split applications ...	Mid—August	70 lb N/Arp.
	Mid—December	60 lb N/Arp.
	Mid—March	60 lb N/Arp.
T_4—4 split applications ...	Mid—August	50 lb N/Arp.
	Mid—November	50 lb N/Arp.
	Mid—January	50 lb N/Arp.
	Mid—March	40 lb N/Arp.
T_5—5 split applications ...	Mid—August	40 lb N/Arp.
	Mid—October	40 lb N/Arp.
	Mid—December	40 lb N/Arp.
	Mid—February	40 lb N/Arp.
	Mid—April	30 lb N/Arp.

9.79 It had randomized block design with 4 replicates. Each plot was comprised of 100 bushes.

Result

The results are expressed as yield of green leaves in kg per plot.

TABLE I

Annual Yield of green leaf (kg/plot)

Treatment		*Mean Yield kg/plot*	*Yield kg/HA*
T_1	...	93.13	9,928.12
T_2	...	90.83	9,682.93
T_3	...	94.00	10,020.87
T_4	...	95.33	10,162.65
T_5	...	92.51	9,862.03

9.80 Standard Error for the difference between 2 means = ± 5.95.

9.81 Analysis of the results shows that there is no significant difference in yield between the treatments. Thus, one application of nitrogen in the form of ammonium sulphate is as good as many split-application at different times of the year. If the economic aspect were to be considered, one application of nitrogen at the required level would be adequate and labour cost be less.

9.82 The objective of Experiment III was to determine the optimum dose of nitrogen and its economic level. This experiment was a randomized block design with 5 treatments of 150, 200, 250, 300 and 350lb in N/Arpent with 4 replicates. Each treatment comprised 200 bushes separated by 2 guard-rows.

Result

TABLE II

Annual yield of green leaf (kg/plot)

Treatment		*Mean Yield/Plot (kg)*	*Yield kg/ha*
T_1 — 150 lb N/Arp.	...	169.01	9,009.19
T_2 — 200 lb N/Arp.	...	180.22	9,606.18
T_3 — 250 lb N/Arp.	...	202.48	10,792.69
T_4 — 300 lb N/Arp.	...	215.59	11,491.45
T_5 — 350 lb N/Arp.	...	213.35	11,372.62

L-S. D at 5% ± 19.351
L-S D at 1% ± 27.131

9.83 Analysis of the results shows that the variation between the treatments is significant. The yield of green leaf increases for every additional 50 lb N/arpent. At 300 lb N/Arp. the yield reaches a peak. A comparative study, using Duncan multiple choice, showed that treatments T_3 and T_4 i.e. 250 and 300 lb N/Arp. are better than the others. Depending upon the cost of fetilizer and the price of green leaf, the economical dosage of fertilizer to be applied could be calculated, knowing the crop response for every unit of nitrogen applied.

9.84 Experiment X was complementary to Experiment III above. The objective of this experiment was to determine the optimum rate of nitrogen application in relation to yield of green leaf and the point at which economic response for higher dosage of nitrogen was not available. This experiment completed its first 3-year cycle. It had 4 treatments and 4 replicates. Nitrogen was applied in the form of sulphate of amonia. The treatments were the following: T_1—80 lb N/Arp., T_2—100 lb N/Arp., T_3—120 lb N/Arp., T_4—140 lb N/Arp. Each treatment was applied in three equal amounts on 1st week of September, mid-November and 1st week of February. The number of replicates was increased to 6 on the 18th September, 1974. The results of the two additional blocks were only recorded as from January, 1975 and not included in Table III.

TABLE III

ANNUAL YIELD OF GREEN LEAF (kg/plot)

Treatment	*Dosage lb N/Arp.*	*Mean Yield/plot/kg*	*Yield kg/ha*
T_1 ...	80	125.65	6,846.84
T_2 ...	100	129.35	6,894.69
T_3 ...	120	137.75	7,342.95
T_4 ...	140	136.32	7,266.20

9.85 Standard Error for the difference between 2 means: ± 10.79. The treatment differences in the yield of green leaf were not statistically significant. This experiment indicates that application of nitrogen in the range of 80 to 140 lb N/Arp. does not result in a substantial increase in leaf production but this may only interpreted as a preliminary conclusion.

SCIENTIFIC OFFICER: I. RAJKOMAR

CITRUS

9.86 The rootstock/scion compatibility trial at Barkly Experiment Station with four orange varieties: Pera, Hamlin, Navel and Valencia late grafted on seven rootstocks: Rangpur lime, Citrange Troyer, Citrange Rusk, Citrange Morton, Sunki Tangerine, Cleopatra mandarine and Trifoliate orange was in progress. The only thriving plants were those which have Rangpur lime as rootstock. 4 plants with Cleopatra mandarine rootstock suffering from rootrot which were inarched with Rangpur Lime in 1973, have recovered completely. All the fruits borne on the different combinations were blown down by cyclone Gervaise.

9.87 The rootstock/scion compatibility trial at Richelieu Experiment Station with four mandarine varieties: Fagan Empress, Djeroek Garoet and Djeroek Keproek grafted on seven rootstocks (same as above) was discontinued in July 1975 when all the plants were removed, the plants being unthrifty and the area bieng required for the erection of a dairy feedlot.

9.88 Seedlings of five rootstock varieties: (1) Rangpur lime, (2) Citrange Troyer, (3) Cleopatra mandarine, (4) Sunki tangerine and (5) Citrus volkameriana which were imported from California Cirus Foundations in 1974 were raised in the Plant Pathology quarantine greenhouse. Great difficulties were encountered in obtaining disease-free budwood as the Citrus Foundation of California and the station de Recherches Agronomiques of Corsica were unable to certify the absence of stubborn disease in their budwood. A request was made, in December, 1972, from I.F.A.C. (Reunion) for the supply of disease free budwood. The Division expects to receive budwood of 12 citrus varieties from I.F.A.C. Reunion Island in March 1976.

Strawberry

9.89 A variety trial was started on 26th April, 1074. The experiment was in randomized block design with 4 replicates and six treatments; the treatments being the 6 varieties: local, 1-4, 1-8, Fresno, Tioga and Cambridge Rearguard. All the plots were mulched with black polythene reflective sheeting which proved very efficient in controlling the weeds.

9.90 Fruits were harvested from 26th July to 10th November. As sufficient irrigation water was not available during the months of October and November there was considerable reduction in yield and fruit quality was seriously affected. There was significant difference among the varieties—the varieties Fresno and Tioga proving superior to the remaining varieties. The average yield of the varieties were as follows:

Tioga	...	...	1.87 m. tons/ha
Fresno	...	...	2.48 „
Local	...	...	1.15 „
1 — 4	...	...	1.36 „
1 — 8	...	...	1.02 „
Cambridge Rearguard		...	0.91 „

The yield figures have been calculated after allowance has been made for 20% of the area to be used as paths between the beds.

Grapes

9.91 Two similar stock/scion compatibility experiments, one at Plaisance Station and the other at Richelieu Experiment Station which were started in November/December 1974 were severely affected by cyclone Gervaise in February 1975. About 57% of the grafts and cuttings died in the month following the cyclone.

9.92 New grafts were made in September 1975 and the experiments were replanted in December, 1975. However as there was no plant of Couderc 13 available it was replaced by another rootstock—Isabelle Abroad.

9.92 Both expeirments have been laid out in randomized block designs with 4 treatments and 5 replicates; the treatments being:

(1) Cuttings of Citronelle variety (Napoleon Chasselas)

(2) Citronelle variety grafted on Isabelle Abroad

(3) Citronelle variety grafted on Isabelle Vacoas

(4) Citronelle variety grafted on Isabelle B.E.S.

Papaya

9.93 Two papaya varieties: *(a)* Sunrise and*(b)* Waimanalo low bearing, imported from the University of Hawaii were sown in the nursery at Barkly Experiment Station n 1975. About 200 seedlings of the sunrise variety were planted at he Central Experiment Station. All the plants were destroyed by cyclone Gervaise. About 200 plants of the Waimanalo low bearing variety which were intended for planting at Richelieu Experiment Station were destroyed by the cyclone in the nursery.

9.94 Seeds of the two varieties were ordered again and they will be sown ith the course of 1976 as soon as irrigation water will be available at Richelieu Experiment Station and Central Experiment Station.

Anthurium

9.95 120 anthurium plants were planted in the shed at Central Experiment Station on 7th May, 1975. These plants are being propagated with the view to obtaining material for future experimental work on the crop.

Soil Regeneration Experiments

9.96 Experiment to compare basalt dust and calcium silicate slag as soil amendments was continued in 1975.

9.97 An experiment set in a randomized block design with five treatments and four replicates was started in November 1972 at Curepipe Experiment Station. The treatments were:

(1) 7.5 tons/ha of calcium silicate slag

(2) 15 tons/ha of calcium silicate slag

(3) 187 tons/ha of basalt dust

(4) 375 tons/ha of basalt dust

(5) Control

9.98 Four cuts were taken from the experiment in 1975 on 22nd January, 2nd April, 28th July and 17th December.

9.99 In all the 4 harvests there was no significant difference in yield among the treatments.

Fodder

Sugarcane

9.100 The Agricultural Division started three experiments at Richelieu Experiment Station in 1974 to determine the agronomic practices for the production of sugarcane variety S17 as a potential source of animal feed for milk and meat production.

9.101 In the first experiment which was planted on the 16th May, 1974, the aim was to investigate the effects of different cutting intervals on the total yield of the crop (stalks and tops). A randomized block design with four replicates and nine treatments was used for the experiment—the treatments being 9 cutting intervals ranging from 4 to 12 months after planting. The harvest of the first treatment was carried out on 26th September, 1974. Subsequent cuts were made on the 26th of each month whenever the harvest of each treatment was due.

9.102 At the end of May, 1975 all the treatments had been harvested at least once. The figures were for fresh weight yield, dry matter production, crude protein and crude fibre were converted to yearly production by the formula:

$$\text{Yearly Production (tons/ha)} = \frac{\text{Average wt/treatment}}{\text{treatment (no. of month after planting)}} \times 12$$

The figure for the period 26th September, 1974 to 28th May, 1975 are tabulated below:

TABLE I

Sugarcane Yield and its Components

Treatments month from planting to harvest	*fresh wt m. tons/ha*	*Dry wt m. tons/ha.*	*Crude protein m. tons/ha.*	*Crude fibre m. tons/ha.*
T_1 4 month ...	149.3	35.8	1.36	8.51
T_2 5 month ...	135.2	27.4	1.30	7.46
T_3 6 month ...	145.8	37.5	1.59	8.85
T_4 7 month ...	129.2	25.2	1.45	7.74
T_5 8 month ...	141.5	34.5	1.20	8.06
T_6 9 month ...	180.3	32.5	1.26	8.23
T_7 10 month ...	177.1	40.6	1.22	9.69
T_8 11 month ...	164.4	40.9	1.09	7.88
T_9 12 month ...	140.3	36.0	0.77	6.98

9.103 This experiment will be continued for another two years.

9.104 The objective of the second experiment was to investigate the effects of different planting dates on the yield of sugarcane (stalk and tops). The investigation comprises a randomized block design with 12 treatments. and 4 replicates and was started in October 1974. The subsequent plantings were done on the 4th of each month until the 4th September 1975 when the 12th treatment was planted. The 1st, 2nd and 3rd treatments were harvested on the 6th October, 4th November and 8th December, 1975 respectively. This experiment will be continued for three years.

9.105 The aim of the third experiment was to investigate the effects of 4 plant populations at three levels of Nitrogen fertilization on the yield of sugarcane (stalk and tops). A split plot design with 3 main treatments being 100, 200 and 300 kg of Nitrogen per hectare and 4 subtreatments being 30,000; 36,250; 45,000 and 60,000 cuttings per hectare and having 4 replicates was used for the experiment. It started inMay, 1975.

9.106 The experiment was harvested for the first time in May, 1975. Analysis of the yield (fresh weight) shows that there is no significant difference between the three nitrogen levels. But the mean yield of the population 36,250 cuttings per ha. is significantly lower than the 30,000 cuttings/ha. and 45,000 cuttings/ha. populations ($p=0.05$) and the 60,000 cuttings/ha. population ($p=0.01$).

Population cuttings/ha	*Mean Yield (fresh wt.) m. tons/ha.*
30,000 ...	... 123.7
36,250 ...	... 103.8
45,000 ...	... 123.8
60,000 ...	... 133.0

Grasses

9.107 An experiment to compare the suitability of 8 grass species as a source of fodder was set up in January, 1974, at Curepipe Experiment Station. The experiment was set in a randomized block design with 4 replicates, each having 8 plots. The grasses were harvested three times during the year. The average yield of the 8 grasses were as follows:

	Fresh weight (m. tons/ha.)
Pennisetum purpureum	... 181.57
Cenchrus ciliaris	... 7.68
Chloris guyana ...	... 104.10
Panicum maximum	... 141.94
Bracharia brizatnha	... 133.29
Bracharia riziziensis	... 105.22
Tripsacum laxum ...	... 157.24
Setaria sphacelata ...	... 151.94

9.108 The experiment will continue for another year. A similar experiment was set up at Palmar Experiment Station. Only one cut was taken in 1975, after which the experiment was discontinued because of shortage of water.

9.109 The experiment at Palmar Experiment Station will be replanted in the beginning of 1976.

Acacia *(Leucaena Leucocephala)*

9.110 An experiment to investigate the effects of cutting height on acacia yield, comprising a randomized block design with 4 replicates and 5 treatments, started in January 1974, was discontinued in 1975 after the cyclone *Gervaise*. Following the passage of the cyclone the acacia plants were almost completely defoliated. It was decided to apply the usual treatments without collecting any data i.e. the plants were just cut at different heights, according to experiment, and the twings discarded. The subsequent growth in the plots was so erratic that the experiment was discontinued. The experiment will be repeated using a greater distance between the rows.

Legumes

9.111 Growth studies on legumes grown as cover crops in orchards, started in August 1974, was discontinued in 1975. The legumes under study are *Vigna marina, Centrosema pubescens, Phaseolus atropurpureus, Glycine javanica* and *Desmodium intortum*. The legumes were harvested on 16th April, 1975. After that cut there was very little growth during the rest of the year and there were no more cuts.

9.112 The trial will continue in 1976.

Chinese Agricultural Team

January to May 1975

9.113 The Chinese Agricultural Team, with the active cooperation of the Ministry of Agriculture, is carrying out experiments on rice cultivation (first crops) at Belle Vue Sub Station.

9.114 In spite of the violent cyclone *"Gervaise"* which was acompanied by heavy downpour, fairly good yield was obtained.

9.115 The factors that deserve attention are the following:

(a) adequate and well-distributed water supply

(b) the application of organic manure to improve soil texture and its fertility

(c) selection and breeding of good-quality seeds

(d) planting rationally closely i.e. using a high seedling population per unit area

(e) careful management of the standing crop

(f) observation and control of pests and diseases

9.116 The procedures for the cultivation of this crop were as follows:

Sowing period	December 18, 1974 to January3, 1975 or 17 days
Transplanting period	January 8 to 31, or 23 days
Harvesting period	April 18 to May 20 or 33 days
Days from sowing to transplanting	About 20 days
Days from transplanting to maturity	About 100 days
Days from sowing to maturity ...	120 days

9.117 Due to shortage of labour, the period of transplanting and harvesting was rather long.

9.118 Except for the cyclone, the climatic conditions during the growing season were suitable. The temperature at Belle Vue was between 21 and 31°C which was neither too low nor too high. In March and April, when the rice was at the stage of heading, flowering and milking, the temperature difference between day and night was favourably big (about 7-8°C). Fine days providing enough sunshine and no wind promote milking and seed formation of rice.

9.119 The area planted under rice was 5.5 arpents and the total yield of paddy rice was 15,897.5 kgs (12% humidity). The average yield per arpent was 2,890 kgs. The highest yield was 3,295 kgs per arpent and the lowest (in one plot) was 2,532 kgs per arpent. An area of 0.458 was used for experimentation.

9.120 The details of the production are seen in the following tables:

TABLE I

RICE PRODUCTION AT BELLE VUE (First Crop 1975)

	Field	*Area*		*Yield*	*Yield*	
		Arpents	*Hectares*	*Kg*	*Tons/ Arpent*	*Tons/ Hectares*
For Production	1st grade* field ...	0.562	0.237	1,813	3.224	7,639
	2nd grade field ...	2,438	1.029	7,317.5	3.000	7,111
	3rd grade field ...	2,500	1.055	6,766.8	2.705	6.460
	TOTAL	5.500	2.321	15,897.3	2,890 (Av)	6.848
	Experimental Plots ...	0.458	0.194	1,170.7	2,545	6.030

9.121 The cultural practices adopted were as follows:

I. *Deep ploughing and careful preparation of the paddy field*

9.122 The soil at Belle Vue is a heavy clay with many stones. It needs constant improvement if it is to be highly productive.

*The grade refers to the texture and fertility of the soil.

9.123 With the present conditions regarding materials and labour, the work was done in two aspects: Firstly: deepening the farming layer (to 18-20 cm), ploughing and harrowing to fine tilth. The soil was turned over by ploughing and left to dry so that it can loosen and release available nutrient. This was followed by a ploughing operation and the field was then harrowed to give a fine tilth. Each plot is levelled as far as possible to facilitate uniform application of fertilizer, irrigation and drainage. The rice would then grow uniformly. Most of the plots have been ploughed and harrowed twice.

9.124 The deepening of the farming layer does not only facilitate the development of the root system but also improves the characteristics of the soil namely aeration, water temperature microbial activity, availability of nutrients. With these conditions the root system can develop more freely and to a greater exent thus extracting a greater amount of nutrients for the crops. In addition, well-developed rootsystem provides better anchorage for the plants and consequently resistance to lodging.

9.125 Secondly: all bigs stones in the field were moved out to make cultivation easier and to increase the area of arable land.

II — *Nursery management*: ...*Rational thin sowing, raising of strong seedlings, and transplanting at proper stage*

9.126 If high yield is to be expected, attention should be paid to the raising of strong seedlings. When seedlings are strong and transplanted at the proper stage they will have resistance to lodging, turn green quickly, tiller early, produce long, large ears with plenty of full seeds. Careful management of the nursery will be very rewarding in terms of production.

9.127 The seedlings that were produced for this crop had the basic standard characteristics of strong healthy seedlings: thick and white roots, green leaf blades; high plants, flat and strong stems. The seedlings grew uniformity, did not suffer attack by pests or diseases. They were transplanted at the proper stage.

TABLE II

DATA ON SOWING AND TRANSPLANTING OF THE SEEDLINGS AT BELLE VUE (First Crop)

Batch of Seedlings		*I*	*II*	*III*	*IV*
Leaf Stage (No. of leaves)	...	6.2	5.5	6.02	5.02
Height of plant (cm)	...	27	29	34	27
Length of leaf (cm)	...	16	19	23	17
Width of leaf (cm)	...	0.59	0.63	0.68	0.55
Height of pseudo-stem (cm)	...	9.5	11.2	12	10
Width of pseudo-stem (cm)	...	0.47	0.45	0.53	0.45
Date of sowing ...	...	18/12	24/12	28/12	3/1
Date of transplanting	...	8 to 14/1	14 to 18/1	18 to 20/1	23 to 26/1
Period in nursery (days)	...	21—27	21—25	18—20	20—23
Seeds kg/arpent ...	...	285	285	285	320
Nursery: plots transplanted	...	1 : 7	1 : 7	1 : 7	1 : 8

9.128 In raising strong seedlings, besides sterilization, soaking and pregermination of seeds, proper preparation of land, and timely sowing, the following important practices should be carried out properly:

A. Rational thin sowing

9.129 285—300 kgs seeds to sow one arpent nursery with equal amount to each bed. Cross sowing is done in order to grow uniform seedbed and raise flat and strong seedlings.

B. Rational application of fertilizers

9.130 As the cliam was getting progressively wormer and wetter, fortilizers had to be applied judiciously—enough to produce strong seedlings. Overdosing of fertilizers would produce too much of vegetative growth.

9.131 Four or five days before sowing, 5-6 tons of cow manure and 150 kgs of single super phosphate were applied as basal fertilizers per arpent of nursery. 20-30 kgs of sulphate of Ammonia and 15-20 kgs of Muriate of Potash were applied as surface fertilizer just before sowing; and 25-30 kgs sulphate of Ammonia were applied as top dressing when seedlings were at 2.5-3 leaf stage. This method of fertilization is coupled with an appropriate water supply.

C. Transplanting at the proper time

9.132 Proper timing in the transplantation of the seedlings results in better productivity. The optimum time for transplantation of the seedlings is when the seedlings have reached the 5.5—6 leaf stage.

9.133 The seedlings are removed by hand, with great care so as not to break or damage them. They should be transplanted on the same day In so doing, the seedlings would turn green quickly after transplanting.

III. *Selection and Use of good varieties and careful cultivation*

9.134 To obtain high yields in large scale plantations, it is necessary to select and use good varieties with stable and high yields and pure, good quality, full and firm seeds. But it must be pointed out that a given variety will produce to its full potential only when it is given the right conditions fitted to its needs.

9.135 Experiment and observation have shown variety TN_1 to possess the following desirable characteristics: fertilizer responsive, dwarf, high tillering ability, straight leaf blades. However, it also has its weak points: the ears on the main stem and those from the tillers are not of the same size, non-uniform heading and comparatively small ears. Proper techniques were herefore used to promote good growth and early tillering and limit the

production of ineffective tillers at the middle and late stages of growth. These techniques were *(a)* application of enough basal fertilizers, *(b)* rational close planting, *(c)* careful management during growth.

Variety Trial

9.136 From he results of the variety trial with nine other varieties, TN_1 has proved to be the best one suitable to plant in Mauritius now.

TABLE III

Results of Variety Trial

Variety	*IR 532 –420*	*TN₁*	*J 349*	*IR 532 –9334*	*IR 532 9319–1*	*IR 665 6292*	*IR 532 9319–2*	*CS–2*	*YRL₁*
Days from transplanting to maturity	111	120	120	116	120	119	119	130	110
Yield Kg/Arp.	3227	2961	2955	2900	2874	2842	2812	2278	2243
Index	108.9	100.0	99.8	97.9	97.1	96.0	94.9	76.9	75.7

TN_1 for check

9.137 From the above table, variety IR 532-420 is the highest yielder,—3,227 kgs per arpent. TN_1 is next with a yield of 2,961 kgs per arpent. The yields of other varieties are lower than those of TN_1 and IR 532-420. Varieties CS—2 and YRL gave the lowest yields 75.7% and 76.9% respectively compared to TN_1 (control). The main reasons for low yield with variety YRL, is its proneness to get easily lodged, its low tillering ability, thus producing small number of ears. The disadvantage of variety C.S. 2 is its long crop cycle. When most varieties are mature and the field has to be drained off, its seeds are still unripe and empty. The variety C.S. 2 is not pure and ripens nun-uniformly.

9.138 Varieties IR 665-6292 and IR 532-9319-2 too are not uniform heading, comparatively short growing cycle (119 days), producing many ears, and weighty seeds.

9.139 However, the leaf blades are short, wide, thin which dries up easily at the last stage of growth. The seeds have a tendency to shatter. Variety TN_1 has strong resistance to shattering. The leaf blades are narrow and rigid thus allowing good ventilation. After heading, the ears are all under the flag leaves thus, providing protection against attack by birds and damage by wind.

IV—*Taking proper measures suited to the local conditions*

(1) *Rational close planting*

9.140 Yield of rice is proportional to the following factors:

(1) Number of ears

(2) Number of seeds per ear and

(3) Weight of seed

9.141 In general, number of ears is the most important factor affecting yield.

9.142 The spacing is decided according to the climate, the season, the fertility of the soil, the variety and the amount of fertilizer to be applied.

9.143 A close spacing of 20×16 cm with 6-7 seedlings per hill was adopted. This is equivalent to 126,000 hills or 75,000 to 880,000 seedlings per arpent. Finally, the number of effective ears produced per arpent reaches 1.6 to 2 million. The proportion of main ears to tiller ears is 1:1. The yield is dependent on both main and tiller ears.

9.144 With this high plant population, more stable and higher yield can be expected. In plots with yields over 2.8 tons paddy (12% humidity) per arpent, the effective ears numbered 1.8 to 2 million. Whilst the number of ears in the plot yielding less than 2.8 tons rice was inferior: 1,607 million.

9.145 The proportion of main to tillears is roughly 1:1 except for plot IV-10 see table below).

TABLE IV

THE RELATION BETWEEN YIELD AND EARS

Plot No.	*I–4*	*III–10*	*III–4*	*III–11*	*II–2*	*II–3*	*II–8*	*III–6*
Yield (tons/arpent) ...	3.295	3.218	3.108	3.070	2.997	2.990	2.988	2.772
Total ears, 1000s/arpent ...	1848	2065	2065	1823	1848	1899	1823	1607
Main ears%	46	37.8	48.7	44.2			46.4	
Tiller ears%	54	62.2	51.3	55.8			53.6	

9.146 The relationship between yield and number of effective ears is clearly borne out in the results of the Spacing Trials.

TABLE V

RESULTS OF SPACING TRIAL

Relationship between yield and number of ears for different spacings

Spacing (cm)	20×13	20×16	20×20	26×20	26×26
Yield kg/arpent	3496	3511	3416	3317	3104
Ears per hill	11.45	14.80	15.20	19.50	26.00
Total ears per arpent (thousands)	1812	1873	1603	1560	1560

9.147 The table shows that the closer spacing producing higher number of ears give higher yields.

TABLE VI

COMPARISON OF YIELD (KG)

Spacing (cm)	*Code*	*Yield*	*Difference*			
20×16	D	16.64				
20×13	C	16.57	0.07			
20×20	E	16.19	0.45	0.38		
26×20	F	15.72	0.92*	0.85	0.47	
26×26	G	14.71	1.93**	1.86**	1.48**	1.01

9.148 The statistical analysis shows that the yield of treatments D.C.E. are significantly higher than yield of treatment G at 1% level and that yield of treatment Fis significantly higher than yield of treatment G at 5% level. Yield of treatment D is significantly higher than yield of treatment F at 5% level. The yield of treatment D (20×16 cm) is the highest. This is the most suitable spacing for large scale production under present conditions. The yields of treatments F and G are low because the spacings are too wide and the crop cannot make full use of the space and fertility of the soil.

V. *Application of organic manure and chemical fertilizers*

9.149 Paddy rice is a crop consuming a lot of fertilizer. Analysis shows that a crop yield of 3 tons of paddy from one arpent extracts the following amounts of nutrients from the soil: N: 73 to 82 kgs, P_2O_5: 28-5 to 31.7 kgs and K_2O: 69 to 101 kgs. High yield can be expected only if fertilizers are applied in the correct amount and proportion.

9.150 Chemical fertilizers are easily lost through leaching due to the high permeability of the soil at Belle Vue. In the past, the practice was to apply chemical fertilizers only. Now a combination of organic manure and chemical fertilizers is being applied. The manure which de-composes slowly ensures a gradual supply of nutrient to the crops and improve the texture of the soil.

MANURE AND FERTILIZER TRIAL

9.151 The experiment showed that chicken manure and cow manure applied in equivalent amounts gave better results than chemical fertilizer amonium sulphate.

9.152 Each treatment supplied an equivalent of 63.3 kgs N/arpent.

Treatment A—A—chicken manure, 3.07 tons (chicken manure contains 2.06% N)

B—Cow manure, 16.2 tons (Cow manure contains 0.30% N)

C—Ammonium Sulphate—300 kgs (Ammonium Sulphate contains 21% N)

L.S.D. 5%=0.91
1%=1.24

Application

9.153 The manures are applied two days before transplanting and mixed thoroughly with the soil. The Ammonium Sulphate was applied in 3 dressings: 40% as basal dressing, 40% at tillering stage and 20% at earing stage. 127 kgs/arpent of single Superphosphate were applied to each plot as basal dressing and 94 kgs/arpent of Muriate of Potash applied half as basal dressing and half at panicle initiation stage.

TABLE VII

Treatment	*Yield kg*					*Mean kg*	*Comparison with control %*
	I	*II*	*III*	*IV*			
A ...	6.58	6.65	6.63	6.20	26.05	6.51	132.66
B ...	6.83	5.66	6.46	6.46	25.41	6.35	129.36
C ...	5.10	4.28	5.21	5.10	19.64	4.91	100

9.154 Transplanted on 31.1. at a spacing of 20×16 cm, with 7-8 seedlings per hill. Plot size was 8.75 m² (2.5 m×3.5 m).

9.155 The Statistical Data shows that the efficiency of organic manure is better (F value 25.20). When cyclone *Gervaise* came seven days after transplanting, the fields were innundated and a great part of the basal dressing (40%) of Ammonium Sulphate must have been leached away, while the organic manure retained its nutrients.

Large Scale Plantation

9.156 The amount of N, P, and K applied in the fields were as follows:

TABLE VIII

Fertilizers for large scale production kg/arpent

Stages	*Amonium Sulphate*	*Single Super Phosph te*	*Muriate of Potash*
During land preparation (basal) ...	57	127	26
First intertillage	31	—	—
Second intertillage	31	—	—
During panicle intitiation stage ...	31	—	26
During earing stage	31	—	—
TOTAL ...	181	127	52

9.157 Besides chemical fertilizers, 5 tons of cow manure and 0.8 tons of chicken manure were applied per arpent. All the cow manure were applied during land preparation. Because supply of chiken manure was irregular, it was applied during the first and second intertillage operations.

9.158 In order to prevent excessive vegetative growth especially when the temperature was high and the days long, nitrogen was supplied in several split applications. After cyclone *Gervaise* 26-31 kgs ammonium sulphate were applied per arpent. This application was most necessary for the plants to regain vigour to make for the loss of Nitrogen fertilizer during the cyclone.

9.159 Intertillage and weedling was done immediately after the application of fertilizers at tillering stage. Firstly, the fields are drained, secondly the fertilizer is applied and thirdly intertillage and weeding are carried out. During the first intertillage the seedings were upheld and recruiting and weeding were the soil to increase its efficiency.

TABLE IX

9.160 PADDY YIELD AT BELLE VUE SUB-STATION (August, 1975 to January, 1976)

Items	*Paddy (tons/arpent)*	*Area (arpent)*	%
Production ...	5.048	0.153	3.2
„	4.501 — 5.000	0.809	17.6
„	4.301 — 4.500	1.022	21.0
„	4.001 — 4.300	2.248	47.2
„	3.500 — 4.000	0.556	11.0
Mean ...	4.293	4.788	100.0

9.161 During this crop, the conditions for rice growing were favourable. The average yield of paddy was fairly high and high yield obtained from large acreage. Only 11% of the total area cultivated gave between 3.5 and 4 tons of paddy per arpent and the rest of the acreage yielded over 4 tons paddy per arpent. The figures illustrate well that the climate and soil conditions at Belle Vue are quite suitable for rice cultivation. The potential of increasing the yield is still big. Still better yield can be obtained with the construction of better irrigation system, levelling of the fields, soil improvements and proper cultural measures.

9.162 Great attention should be paid to field management right after transplanting in order to secure enough ears, big ears with high seed weight to give maximum yield. Fertilisation and water control were the main target for good field management at Belle Vue in addition to pest and disease control, weeding and intertillage. Fertilisation included the use of both organic manures and inorganic fertilisers. Organic manures were used mainly as basal dressings and inorganic fertilisers mainly for top dressings coupled with appropiate amount of organic manure. 196 kg Sulphate of amonia and 63 kg. muriate of potash were used to the arpent. More than 80% of total nitrogen used (including that in the basal manures) were applied at the early stage for the seedlings to grow quickly and to secure enough sound plants. Appropriate amount of ammonium sulphate was applied at the late stage (during panicle initiation stage) to avoid premature senescence of plants.

In the second application and in the same plot, more ammonium sulphate was applied to those plants which were not growing well and less to those growing well. With this practice the plants of the same plot or on the whole farm could grow uniformly. 125 kg of single superphosphate previously mixed with the cow manure were applied to the arpent. Water control was the same as last season.

TABLE X

9.163 AMOUNTS OF CHEMICAL FERTILIZERS FOR TOP DRESSING APPLIED TO THE ARPENT

Time of Application	*Ammonium Sulphate (kg)*	*Muriate of Potash (kg)*
8-10 days after Transplanting ...	50	31.5
15-20 days after Transplanting ...	80	—
44 days after Transplanting ...	30	31.5
Heading stage	36	—
TOTAL ...	196	63.0

VI. *Water Management*

9.164 In order to achieve best results, proper water management is important. During the early stage, i.e. from transplanting to the end of effective tillering stage, a shallow depth (3-4 cm) of water is maintained in the fields so as to promote tillering.

9.165 During the middle stage i.e. from the end of tillering stage to appearance of flag leaves, the fields are drained off and left to dry in the sun several times. This is done to improve the aeration of the soil, promote decomposition of soil organic matters. Development of the system is thereby improved and the stems are strengthened. The strong seedlings have greater resistance against lodging and diseases. The extent to which the fields are dried, depends on the soil texture and the conditions of the seedlings. Fertile and clay soils are dried more severely. The general requirement is for the surface of the soil to become cracked, the leaves look pale green, are rigid and not dishevelled, many new roots appear exposed above the soil surface.

9.166 During the last stage, i.e. from appearance of flag leaves to maturity, the field is irrigated again—once every 3-4 days until headling. From headling to early stage of maturity running water is kept to a shallow depth of 3-4 cm. From early stage to late stage of maturity, the field is irrigated once every 3-4 days and allowing it to dry naturally .

9.167 The fields are drained off completed 10 days before harvesting for ease of the operation.

9.168 This water management system would require at total amount of 800 mm of water for the farm.

VII. *Pests and Diseases*

9.169 Straw flies, *parnara* spp., rice borers, leaf miners, army worms, rice blast and sheath rot have observed in succession during the crop season. The borers, *parnara* spp. and straw flies were more numerous and affected the growth to agreat extent. The other insects and diseases occurred on a very small scale and did no noticeable damage to the crop.

A. Rice Borers

9.170 This borer belongs to the Pyralidate family. The species is unknown. It is an insect pest boring into the stems. Two generations have occurred during this crop. The first generation appeared at the end of January and the beginning of February; the second generation appeared at the end of March.

9.171 The damage caused by this borer is very important. The first generation affected 13.75% of the plants and the second generation affected 62.9% of the plants. The larvae attacked parts of the stem from transplanting to to tillering stage. After jointing, the plants are seldom attacked. However none of the affected plants showed the white head symptom.

B. Parnara

9.172 *Panara marcalii* belongs to Hesperiidae family. It is an insect pest which chew the leaves. Only two generations have damaged the plants. The adults o fthe first generation laid eggs in the middle of January and the larvae started to damage the plants on February 18-22. The adults of the second generation laid eggs at the beginning of March, and the larvae started to damage the plants in the middle of March. The adults of the third generation appeared by the end of April. They caused no damage as harvest had started.

9.173 The insect population was high. There was about one insect per hill in the first generation. The eggs laid by the adults of the second generation were twice to three times as much as those of the first generation. Due to the low humidity at that time and the high incidence of natural parasites such as *Tlenomus dignus* Gahan and *Trichogramma eranescenes*, Westwood, in the eggs of the *Parnara*, the damage was not as severe as during the the first generation.

C. Strawflies

9.174 The straw fly is a small insect whose larvae bore into and damage the pseudo stem of young seedlings. The new leaf coming out of the affected seedling is torn, distorted and dry white. Growth is seriously affected. The larvae generally causes damage from young seedlings stage to tillering stage. After jointing, the plants are seldom damaged.

9.175 The life cycle of the strawfly is rather short: 15-20 days. Five generations can occur during the first season crop (December to April).

D. Leaf miners and armyworms

9.176 Leaf miners and armyworms occured in very small quantity. Leaf miner appeared mainly together with strawfly. The Army worm appeared mainly at maturity stage of the rice.

E. Diseases

9.177 Rice blast occurred only in the plot where fertilizers were not applied uniformly. It did not spread. Sheath rot disease only appeared on the flag leaves on a few plants after ear-bearing.

Prevention and Elimination or Control

9.178 The guilding principle of "prevention and composite Control" is adopted.

9.179 Specific insecticides and fungicides are applied against the insect pests and diseases respectively. Close and constant observation is kept to find out the first occurrence of pest and disease so that control can be effected right in time to prevent spread.

9.180 The following practices were adopted:

(i) Seed sterilization—to eliminate diseases carried by the seeds such as blast. The method is to soak the seeds in a solution of "Ceresan" at 0.2% for 12 hours before sowing.

(ii) Roguing of affected and diseased plants at nursery stage.

(iii) Giving good growth conditions to the plants to increase resistance to pest attack and diseases.

(iv) Forecasting pest occurence for timely application of control measures. A lamp fitted to a funnel and collecting tin is placed in the fields at night to capture the insects. This helps to have an idea about the type of insects and their population. Timely application of insectitude saves the amount of insecticides and gives better results.

Control

9.181 To control *parnara* spp. and trawflies, DDVP, sevin, Sumithion and Malathion were used in succession. The mixture of DDVP and Sevin gave the best results. To control *parnara,* the insecticide was applied 3-4 days after the eggs hatched. At this stage, the larvae had very weak resistance against the insecticides and could be completely eliminated. Against strawflies, a spray was caried out when the torn leaves were just coming out.

9.182 Against rices borers, Azodrin (Nuvacron), Dimecron, DDVP, Sevin and Sumithion were used in succession. No good result was obtained, as the borers, having bored their way in to the stems were rather inaccessible to the insecticides.

9.183 Rice blast was controlled with "Kasumin" when the disease spots just appeared on the leaf blades; "Kasumin" is safe and very effective.

VIII. *Harvest—at the proper time, careful reaping and thrashing*

9.184 Harvest must be done at the proper time in order to get the best results in terms of yield and quality of seeds. A crop is ready for har-

vest when the stems and leaves become yellow, when most of the seeds apart from those at the basal part of the ears are mature. If harvest is done too early, many grains would be still unripe and small, thrashing would be difficult and as a result yield will be lower. If harvest is done too late, the yield will still be lower. If harvest is done too late, the yield will still be lower, because the stems and ears would be too dry and the grains will shatter when reaping is done.

9.185 Reaping and thrashing should be done carefully so as to lose the minimum of grains. The paddy should be dried to 12% humidity very quickly and sent to the store or the milling station.

August, 1975 to January, 1976

Rice Cultivation

9.186 The total area under rice plantation for the second crop at Belle Vue Sub-Station was 5.715 Arpents, comprising 4.788 Arpents for production and 0.927 Arpents for experiment. The average paddy yield abtained from the production units was 4.293 tons/arpent. The highest yield obtained was 5.048 tons/arpent. There were 4.232 arpents representing 89% of the total area cultivated giving over 4 tons of paddy/arpent (Table IX).

9.187 Besides the rice cultivation, rice experiments were carried out on spacing trial, variety trial, pest and disease control, organic and inorganic fertilizer trials. The results of some experiments were the same as in the first crop and some of the experiments had to be continued.

B. Rice in Sugarcane interrows

9.188 Most arable land in Mauritius is under sugarcane and very little under paddy rice. The objective of planting rice in sugarcane interrows is to develop rice production without affecting the sugarcane yield. Under the leadership of the Ministry of Agriculture of Mauritius, the Team together with the Mauritius Sugar Industry Research Institute started experiments in August 1975 at F.U.E.L., Belle Vue Sugar Estate and Belle Vue Farm. The experiments carried out in the first two places were in ratoon sugarcane fields with overhead irrigation. The sugarcane varieties were S 17 and M13/56 and the rice varieties used were IR—420, YRL—1 and TN_1. The experiment at Belle Vue Farm was in virgin sugarcane field with surface irrigation. The cane variety used was M 13/56 and the rice varieties were IR—420, TN_1 and Kwang loo—No. 4 (the last variety newly introduced from China). The area under experiment at F.U.E.L. was 1.25 arpent, at Belle Vue Sugar Estate 0.75 arpent and 1/6 arpent at Belle Vue Farm.

9.189 Preliminary results of the experiments show that Belle Vue Farm gave the best results:

Kwang 100—i no. 4	...	1.265 tons paddy/arpent (2.3 tons/arpent pure stand)
IR—420	...	1 to 1.29 tons paddy/arpent (2 –2.35 tons/ arpent pure stand)
TN_1	...	0.935 tons paddy/arpent (1.7 tons/arpent pure stand

9.190 At F.U.E.L., because the ratoon cane grew quickly, the cane leaves started affecting the rice 90—100 days after sowing. The sugarcane closed up about 120 days after sowing. This affected the filling of seeds to some extent. The rice yields (pure stand) of IR—420 and YRL—1 were about 2 tons/arpent. TN_1 variety produced very few seeds because of the long growing cycle. At Belle Vue Sugar Estate the yield was very poor because of the covering of the cane and the damage caused by birds.

9.191 The initial experiments at the above three places show that for planting rice in sugarcane interrows, the key-point is to have rice variety with characteristics of short cycle, drought resistant and high yield. With this in view, if there is irrigation followed with proper measures of fertilisation and water management, the high yield of both sugarcane and rice can be obtained. The experiments will be repeated to find out ways of solving problems such as the fertilisation requirements, water, weed, pest, disease and bird controls. It is hoped that a practical way of growing rice successfully in sugarcane interrows will have to be sorted out.

C. Sweet Potato Experiment

9.192 Nine varieties of sweet potato were introduced from China in November, 1974. After their release from quarantine by the Plant Pathology Division of the Ministry of Agriculture in April, 1975, the vines were planted for multiplication purposes. In September, 1975, a variety trial was started to find out the yield, quality and adaptability of each variety to local conditions. All the varieties were harvested on 18th February, 1976. The average yield of sweet potato for the nine varieties was 29.2 tons fresh matter per arpent. The highest yield obtained was 37.5 tons per arpent and the lowest 19.1 tons/arpent. The yields of most varieties vary between 27 and 30 ton/arpent. The avarage yield of fresh vines was 11.9 tons/arpent. Sweet Potato vine is known to be a good fodder crop for livestock.

TABLE XI

Results

Varieties	*Tubers (tons/arpent)*	*D. I. %*	*Dry Matter (tons/arpent)*	*Vines (tons/arpent)*
Chain 64—285 ...	37.5	20.5	7.7	13.9
Kwang-Tung 16 ...	37.0	23.4	8.6	9.9
Little-Leaf ...	34.1	27.0	9.2	14.8
Chow Nung 69—219 ...	30.4	19.8	6.0	9.5
Leek	27.8	25.4	7.0	12.5
Peking	27.6	27.7	7.6	8.1
Yue 70—9	27.3	27.0	7.4	14.0
White Starch ...	22.3	28.9	9.4	16.8
Chestnut	19.1	33.0	6.3	7.8
Average ...	29.2	—	—	11.9

9.193 It is found that the variety Chestnut is sweeter and gives better flavour. It is followed by Peking, Yue 70-9 and Leek. The quality of Ghain 64-285, Chow Nung 69-219 and Kwang Tung 16 is poor. They are tasteless and watery, but give high yields. On the other hand, Chestnut is less watery and in spite of its low yield, it gives a high percentage of dry matter. Little Leaf, Peking, Yue 70-9 and Leek give fairly high yield and have very good taste.

9.194 Sweet potato is rich in carbohydrate and contains certain amount of carotin and vitamins. It can therefore be used as food for human beings as well as fodder for livestock animals. Sweet potato can be planted in most parts of the island where there is enough water.

D. Vegetables

9.195 Experiments and propagation were carried out for vegetables. These experiments show that the performances of pipengaille (sponge gourd), chich gua and wax gourd (chinese pumpkins) are good. The yields are high and the qualities fairly good. Pipengaille gave a yield of 13 tons/arpent. 7 kg of pipengaille seeds were sent to Barkly Experiment Station This is enough for the various demonstration centres and Experimental Stations. Chich gua gourd which has a thick flesh gave a yield of 19 tons/arpent. The wax gourd produced a yield of 25 tons/arpent—(30 lbs for one gourd). It also has a thick flesh and can be kept for a long time.

9.196 Results obtained from the abovementioned three varieties show that they can be planted in Mauritius. Before propagation, it is advisable to plant in small areas at different places of the island.

E. Extension Work

9.197 The work of Technical Demonstration and popularization was continued at Mare d'Australia and Medine Sugar Estate. The planters at Mare d'Australia can easily see and learn the rice planting technique. This is done through the method of planting demonstration plots and giving technical advice to individual planters for the past two seasons. During the two seasons of 1975, we planted demonstration plots on land of two planters (Mr. Parbotea and Mr. Gozee). In the case of the first planter, the technique of rational close planting was adopted in all his field during the second season. According to him, there is less weed; less labour is used and high yield is obtained with this method. In the second season we obtained a yield of 3.75 tons paddy per arpent compared to the yield of 2.14 tons/arpent obtained by the second planter.

9.198 Thereafter, all the planters at Mare d'Australia have adopted the rational close planting technique at the first crop of 1976.

9.199 At Medine Sugar Estate we have accumulated some preliminary experiences on how to increase the rice yield there.

F. Fruit Trees

1. The management of Richelieu orchard
2. Experiment to control the greening disease on citrus
3. Pawpaw

The management of Richelieu orchard

9.200 The main practices of orchard management are fertilization, irrigation, pest control, pruning and weeding. Owing to timely management and proper control measures, all the trees were bearing lots of fruits except those old and diseased ones. 24 Citrus trees (except lemon trees) were bearing fruits. Among them twelve are bearing fruits for the first time. 1500 fruits will be collected averaging 120 fruits per tree. One 'Golden Seal' orange tree producing 210 fruits is superior to the others. 12 old trees (most of them diseased) were also bearing fruits. There were will be about 2,400 fruits giving an average of 200 fruits per tree. Some of the diseased plants are attacked by the greening disease.

Experiment to control Greening disease on citrus

9.201 At the end of September 1975, two seriously diseased orange trees, one seriously diseased tangelo tree and one healthy orange tree were selected. Scions were taken from them. Grafting was done after dipping the scions in tetracycline solution. Twenty scions from each tree, after dipping, were grafted. Ten scions, from each tree, were also grafted for check. These were not dipped in tetracycline solution. From the investigation carried out in January this year, there was no mosaic symptom on the 32 orange graftings dipped in tetracycline solution. 9 out of the 14 graftings for check showed serious symptoms of mosaic. The disease rate was as high as 63.3%. The experiment showed that dipping scions in tetracycline solution produces preliminary effect on the control of greening disease on citrus. All the graftings were planted in the field at Belle Vue in the mid February this year. Observations will be continued.

9.202 The experiment of spraying tetracycline solution on the leaves was done on 70 graftings from Barkly Experiment Station (the scions were obtained from Richelieu Orchard). From mid September last year spraying was done every 7 to 10 days. After four sprays, no visible difference could be noted between the sprayed and the unsprayed plants—

9.203 161 trees were planted at Belle Vue Farm, during period from December last year to February this year, for experiment and observation. those 161 trees comprise 129 orange, 20 tangelo, 10 Ponkan and 2 lemon trees.

Pawpaw

9.204 The Lien-nan pawpaw seeds, introduced from China, were sown in mid July 1975 and transplanted at the beginning of October. They started to flower at the end of December and bore a lot of fruits. These will be ripe by May, 1976. It is a dwarf variety with plenty of hermaphrodite flowers, early bearing and abundant fruits. The fruit size is medium and th equality good. But the tasting quality, after planting this variety here can only be judged later when the fruits are ripe.

G. Miscellaneous

9.205 Two batches of Farm machinery have been received from China. They comprise a Jay-Fang Truck, a Feng-Show-35 waterfield wheeled tractor, two-wheel tractors, thresher, trailers, ploughs, harrows and a grain drill. All these have been tried successfully at Belle Vue.

X. Animal Production Division

HEAD OF DIVISION: C. DELAITRE, DIVISIONAL SCIENTIFIC OFFICER

10.01 The staffing of the Animal Production Division during the year 1975 was as follows:

(a) 1 Divisional Scientific Officer

(b) 3 Scientiffic Officers

(c) 3 Technical Officers (the third Technical Officer joined the Service on 20th October, 1975)

10.02 Dr. R. Preston continued to act as Consultant to the Animal Production Division with special reference to the use of sugar cane and sugarcane by-products as animal feed. The work of the Animal Production Division thus continued to focus attention on research on nutrition of cattle.

10.03 The Divisional Scientific Officer continued:

(i) To be in charge of the formulation of rations at the Livestock Feed Factory;

(ii) To advise the Extension Services through a Scientific Officer posted permanently in that Service;

(iii) To sit as a member of a Committee set up by the Chamber of Agriculture on the Development of the Bagasse/Molasses feed.

10.04 During the course of the year the Divisional Scientific Officer acted as Principal Agricultural Officer on two occasions:

14th July — 7th September

18th October — 4th December

10.05 Further, the Divisional Scientific Officer went to Reunion Island as a delegate to the Comité de Collaboration Agricole (Maurice-Madagascar-Reunion) from 29th November to 4th December 1975. Scientific Officer, Mr. L. K. Ma Poon visited Rodrigues from 6th to 10th March, 1975.

10.06 Two officers from the Ministry of Agriculture, Seychelles Messrs Moulinie (Animal Husbandry Officer) and Mr. Delpech (Area Supervisor Extension) visited Mauritius from 17th to 29th March; their interest was development of Livestock Production.

10.07 During 1975 FAO/UNDP Milk and Beef Production from sugarcane and by-products (MAR/73/006) came to an end and a new Project, Milk Production and Processing (MAR/75/004) started. Most of the objectives of Project MAR/73/006 (Milk and Beef Production from sugar cane) had been achieved.

(i) Heifers had been imported from New Zealand and distribution of pregnant heifers to cowkeepers had taken place as a joint effort of the Ministry of Agriculture and Natural Resources and the Environment and the Rural Development Unit of the Ministry of Economic Planning. The cows are supplied free to selected cowkeepers and three calves have to be returned to the Ministry of Agriculture and Natural Resources and the Environment at weaning time at approximately 3 months of age.

(ii) A programme of research concerning the feeding of sugarcane and its by-products to growing and fattening animals and for milk production has been carried out

(iii) A full confinement feedlot has been constructed and managed. The collection of effluent and its application as a fertiliser has been looked into.

10.08 The following equipment has been provided by FAO/UNDP during the year under review:

1 Bagasse Digestor manufactured by Cassis Ltd. and installed at Constance Lagaité Sugar Estate is still in the process of being developed and improved, 1 Feed Mixer/Delivery trailer.

10.09 In August 1975 the Government of Mauritius and FAO/UNDP signed a new Project entitled Milk Production and Processing (MAR/75/004). The Project will last three years. The Project is concerned with the setting up of two pilot scale 250 cow intensive milk production units based on the feeding of ensiled sugar cane and by-products as the primary energy source and employing modern housing and milking procedures. The UNDP contribution will be for the purchase of 600 dairy heifers, the supply of milk producing and processing equipment and machinery for the harvesting and ensiling of cane tops with approriate additives.

10.10 The UNDP will provide scholarships to local Officers to be trained in milk processing, in dairy herd management and milking techniques. The UNDP will provide scientific equipment to establish a Ruminant Research Laboratory.

10.11 The Government contribution will be:

(a) The financing of the contruction of Dairy Feedlots

(b) The financing and construction of silos

(c) Provide supporting machinery

(d) Operation costs

(e) Provide staff and labour.

10.12 The programme of work for 1975 was somewhat disturbed by Cyclone *Gervaise* which hit the island on 6th February. If the Feedlot at Richelieu and most of the other Livestock buildings withheld the cyclonic winds the supply of fodder to experimented animals was somewhat disrupted. A trial concerned with the fattening of adult Malagasy cattle with molasses urea diet had to be stopped because the animals had not received adequate fodder during the cyclone. The pens were exceedingly muddy; the condition of the animals had deteriorated and were consuming on an average only 4 kgs of molasses/urea per head/day.

10.13 The role of the Scientific Officers is also to give advice to farmers, either directly or generally through the Extension Service. In line with that policy, as from June 1975 the Scientific Officers of the Animal Production Division were requested to advise the Officers in charge of the Livestock Breeding Stations on all management problems. For this purpose Mr. Naidoo was posted to Palmar Livestock Breeding Station, Mr. Ma Poon was posted to Curepipe Livestock Breeding Station, Mr. Boodoo was posted to Richelieu Livestock Breeding Station.

Research Work

10.14 Four bulls were undergoing Performance Testing at Palmar Livestock Breeding Station. The best of the lot at the conclusion of the test would be used for Artificial Insemination by the Animal Health Division.

The preliminary results are the folowing:

Tag No.	*Date of Birth*	*Initial weight kgs.*	*Age in day*	*Weight an 23.1.76 kgs.*	*Age in days*	*Total gain kgs.*	*Average daily gain*	*Weight age*
2,057	12.3.74	168	408	328	681	160	596	0.481
2,087	24.8.74	138	271	330	544	192	703	0.607
2,089	14.8.74	95	253	258	526	163	597	0.490
2,091	15.8.74	95	253	270	525	175	641	0.514

10.15 An experiment was carried out to test the hypothesis that in molasses based rations for fattening cattle, greater efficiency was achieved when supplemented with gluconeogenic material such as cereal grain (maize). Work elsewhere had shown that utilisation of ensiled high moisture maize resulted in greater production of propionic acid in the rumen.

MATERIALS AND METHODS

10.16 The two treatments in a random block design were:

(a) Dry ground maize fed at 1 kg daily and

(b) the same maize but ensiled for 21 days after raising the mixture content to approximately 30%. There were two groups of 6 bulls on each treatment. The rest of the ration was ad libitum molasses/urea, green forage at 3% of live weight, 300 gms fish meal daily and minerals. The experiment was carried out at Palmar Livestock Breeding Station and lasted 186 days.

10.17 Mean values for feed intake and live weight gain are as follows:

	Ensiled Maize 30% mixture	*Dry Maize*
Initial weight kgs (average) ...	165.2	177.5
Final weight kgs	245.5	252.3
Daily gain grams	480	400
Feed intake kg/day Grams ...	8.44	8.61
Molasses	3.81	3.47
Urea	.095	.085
Maize	1.41	1.14
Fish Meal	.2	.2

10.18 Analysis of variance for weight gain:

Source of variation	*Degrees of freedom*	*Mean square*
Maize	1	840.75
Replicate ...	1	324
Interaction ...	1	6.3
Error	12	966

10.19 The difference betwen the two treatments did not reach significance. However this experiment shows the practical value of being able to use ensiled high moisture maize in high molasses diets, further harvesting maize at 30% moisture probably saves 20-30 days which is important when maize is grown in interrows of sugar cane and ensiling avoids the need for expensive drying.

10.20 In this trial the value of groundnut meal, formaldehyde treated groundnut meal, and fish meal as protein sources in a molasses/urea fattening diet was investigated. The aim being to test the hypothesis that reducing the solubility of the protein in groundnut meal by treatment with formaldehyde would improve its efficiency as a protein supplement to high molasses/urea diets.

Materials and Methods

10.21 The four treatments in a random block design with two replicates were:

Untreated groundnut meal

Formaldehyde treated groundnut meal (2.5% formaldehyde in the meal)

Fish Meal

No supplement

10.22 Groundnut was given at 240 gms daily and fish meal at 200 gms. Molasses containing 2.5 per cent urea was ad libitum and forage at 3 per cent of live weight. 1 kg of maize grain per head per day was also given. The groups were of 4 Creole heifers on each treatment.

Results and Discussions

10.23 Mean values for weight gain and feed intake:

	Control	*Groundnut Meal*	*Formaldehyde Treated Groundnut Meal*	*Fish Meal*
Live wt. kgs				
Initial	210.8	212.7	214.1	227.8
Final	281.3	297.4	294.2	307.8
Av. Daily gain ...	.40	.48	.45	.52
Feed Intake kg/day				
Forage	5.9	6.3	6.3	6.4
Molasses urea	6.3	6.5	6.1	7.0

10.24 The trend was for growth rate to be better on fish meal with the results for the two groundnut supplements in an intermediate position however none of the difference was significant. These results showed that there was no advantage from treating groundnut meal with formaldehyde.

Analysis of variance for live weight gain:

Source of variation	*Degrees of freedom*	*Mean square*	*F. value*	*Significance*
Protein ...	3	982	—	—
Replicate ...	1	2,433	5.71	$P < .01$
Interaction ...	3	1,080	—	—
Error ...	24	426	—	—

10.25 In this Experiment the effect of adding unsaturated oil and supplementary fresh forage on the performance of fattening heifers fed on molasses/bagasse/urea groundnut ration will be investigated.

Background

10.26 The use of liquid molasses at the cowkeeper level is not considered practical because of the risk of illicit alchohol production; thus the standard fattening system which uses liquid molasses and forage fed separately cannot be implemented at the village level. It is therefore proposed to evalute the standard molasses bagasse mixture currently used for milk production as a fattening ration for young stock at the same time study the possible benefits of including unsaturated oil and fresh forage to the rations.

Treatments

10.27 Four treatments with two replicates were used.

The four experimented groups received:

MB_1 only ad lib

MB_1 (ad libi + oil (100 gms/head/day)

MB_1 (ad lib) + 1.5 per cent body wt. of green fodder

MB_1 (ad lib) + 100 gms oil + 1.5 per cent of body wt of fodder

The MB_1 mixture currently prepared at St. Antoine S.E. contains:

Dehydrated Bagasses pith ...	14.0
Molasses	73.5%
Urea	2.5
Groundnut cake ...	8.0
Dicalcium Phosphate ...	1
Salt	1
Total ...	100.0

The trial lasted 147 days.

10.28 2 pens of 16 Friesian heifers about 18 months old were allocated to each treatment.

PEN	*1 and 2*			*3 and 4*			*5 and 6*			*7 and 8*		
Ration Treatment	*MB_1+oil*			*MB_1 + oil + forage*			*MB_1 + forage*			*MB_1*		
	Pen 1	*Pen 2*	*Av.*	*Pen 3*	*Pen 4*	*Av.*	*Pen 5*	*Pen 6*	*Av.*	*Pen 7*	*Pen 8*	*Av.*
Initial wt. of animals kgs. ...	274.9	279.5	277.2	273.9	270.1	272.0	279.2	277.2	278.2	272.2	267.8	270.0
Final wt. of animals kgs. ...	382.6	351.5	367.0	370.7	364.4	367.5	371	382.3	376.6	349.9	364.4	357.1
Average daily gain in grams ...			555 gms			540 gms			575 gms			423 gms
Average daily consumption of MB_1 fed and lit kgs.			9.09 gms			10.17 kgs			10.46 kgs			9.78 kgs

10.29 From these results it can be seen that there is a potentiality of rearing stock in villages on a standard molasses bagasse feed + fodder. It was observed that the animals on MB_1 alone and MB_1 + oil seemed to suffer as they were constantly groaning; this is believed to be due to a lack of roughage in the feed.

Molasses for Milk Production

10.30 This trial is a continuation of the experiment reported in 1974 concerning the nutritive value of molasses mixture as a production ration for milking cows. It is believed that the addition of a source of unsaturated oil to the molasses/bagasse mixture fed at a fixed rate to supplement fodder would improve its quality as a daily ration.

Materials and Methods

10.31 Control (i) The molasses/bagasse mixture MB_1 fed to supplement fodder at the rate of 500 gms/kg of milk produced.

10.32 Treatment (ii) The same molasses/bagasse mixture MB_1 fed to supplement fodder at the rate of 500 gms/kg of milk produced + 100 gms of vegetable oil (Peanut oil) per animal daily.

10.33 The same design as for the previous experiment was used whereby each cow acts as its own control namely a standardisation period on cow feed followed by an experimental period and finally a second standardisation period. However only animals that had already calved were available to carry out this experiment so that the starting point of the experiment was on the 100th day of lactation and experimental periods were halved compared to the first experiment.

10.34 Procedure: of a group of 12 cows one hundred days after calving six cows were allocated to the control group and six others underwent experimental treatment. Fodder was provided ad lib and the experimental rations as indicated above. During the standardisation period the standard cereal cow feed was given at the rate of 500 gms/litres of milk produced. The animals were weighed at the beginning of each period.

Results

10.35 Effect of unsaturated oil added to a molasses/bagasse concentrated on milk yield and change in live weight.

	Control	*Oil*	*SE*	*Significance*
Av. Daily Milk Yield Kgs				
Standardisation period ...	6.76	6.92		
Experimental period ...	6.20	6.78		
Persistency $\left(\frac{E}{S_1 + S_2}\%\right)$ ...	91.8	97.9	+ −1.80	P>.04
Live weight change kg/day ...	−.12	−.03	+ −0.07	P>.23

10.36 Above results tend to show an improvement in persistency of milk yield when vegetable oil was added to MB_1; it also indicated a reduction of weight loss during lactation.

10.37 Because the experimental period had to be curtailed the value of the information should be interpreted with some reserve. It nevertheless indicates that the addition of unsaturated oil (which in practice could be in the form of whole groundnut) may prove valuable in improving dairy rations containing high levels of molasses and intended to supplement fodder.

10.38 In the light of this and previous experiments the present day inference is that high molasses diets could only be suitable for moderate levels of milk production.

Silage

10.39 New technology concerning the ensiling of chipped sugar cane is being investigated at Richelieu Experiment Station. Results will be available early next year.

Pigs

10.40 Facilities were provided at St. Antoine Sugar Estate to carry out some trial having as object to reduce the cost production of pork; to make maximum use of locally available by-products and recycle waste from ruminants through pigs and ducks.

Trial (i)

10.41 *(a)* 11 piglets 5 weeks of age fed imported pig feed ad lib over a 15 weeks period they gained an average of 774 grams per day with a feed conversion rate of 2.6:1. Cost of production including labour and overheads Rs 4.19/kg live wt.

10.42 *(b)* In a replicate of the same trial 7 piglets 5 weeks of age over a period of 15 weeks had a feed conversions rate of 2.9:1 and the cost of production including labour and overheads was Rs 4.90/kg live wt.

Trial (ii)

10.43 In this trial a pig starter ration made up of (scum, molasses and fish meal and vitamins) was utilised as follows:

10.44 *(a)* Six piglets 9 weeks of age average weight 15.25 kgs received the standard ration of imported feed + the scum mixture ad lib for 12 weeks average daily gain was 552 grams/day and a conversion rate of 3.7:1 cost Rs 4.17/kg live wt.

10.45 *(b)* Six piglets 9 weeks of age average weight 18.25 kgs received $\frac{1}{2}$ of the standard ration of imported feed + scum mixture ad lib. for 13 weeks. The average daily gain was 384 gms/day and the conversion rate 4.9:1. Cost of production Rs 4.01/kg live weight.

TRIAL (iii)

10.46 In this trial sun dried cow dung containing 18 per cent Crude Protein on dry matter basis was utilised as the major component of a pig starter ration, the other components being molasses, fish meal and vitamins.

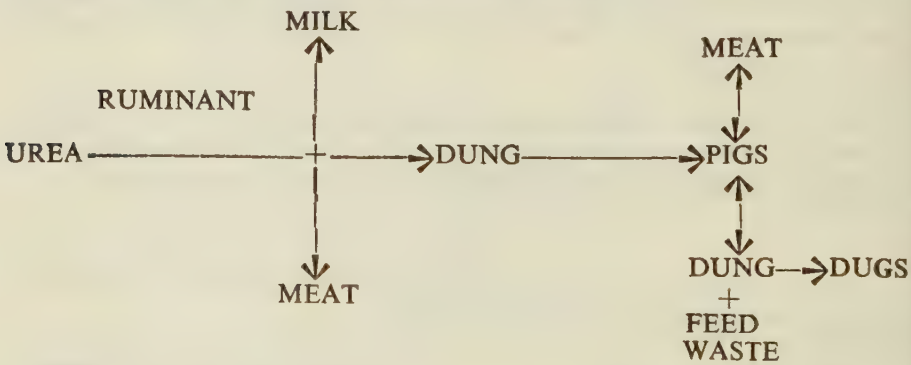
10.47 *(a)* 8 piglets 8 weeks of age average wt. 15.6 kgs received ad lib. a mixture of 50 per cent imported + 50 per cent cow dung feed; the trial lasted 15 weeks. The piglets gains 738 gms/day with a feed conversion rate of 3.5:1. Cost of production being Rs 4.03/kg live wt.

10.48 *(b)* In this trial the fish meal of the pig starter feed mentioned above was replaced by groundnut cake; thus bringing down the price of the ratio considerably.

10.49 10 piglets 7 weeks of age average wt. 12.5 kgs were on trial for 4 weeks. They were fed the cow dung, groundnut cake, molasses, vitamins ration ad lib.

10.50 Their average daily gain was 2.7:1 and the cost of production Rs 2.84 per kilo live weight.

10.51 In the light of these results it is felt that cow dung and scum could be deyhdrated in factories during the crops season when steam would normally be available. These two products could subtitute some imported feedstuffs. Further the feeding of cow dung to pigs would increase the threshold of efficiency of utilisation of protein production by the ruminant from urea—diagramatically this could be represented as follows:



10.52 It has been observed that ducks could be reared in conjunction with piggeries, the ducks consuming nothing else but the dung and the feed waste. The rearing of ducks around piggeries appear to contribute positively in the control of flies around piggeries probably due to the ducks consuming the maggots.

SALE OF BAGASSE/MOLASSES FEED

10.53 In October 1975, the Section dealing with sale of Bagasse/Molasses Feed was transferred to the Field Services Division.

XI. Plant Pathology Division

HEAD OF DIVISION: G. M. LALLMAHOMED, DIVISIONAL SCIENTIFIC OFFICER

11.01 The Plant Pathology Division is involved in aspects of plant disease research and control. Research was mainly carried out on bacterial wilt strain variation, control of ginger blight, control of pea *Ascochyta* blight and halo blight of bean. Assessments were performed on new plant introductions for resistance to main diseases.

RESEARCH INVESTIGATIONS

BACTERIAL WILT (PSEUDOMONAS SOLANACEARUM) STRAIN VARIATION STUDIES
G. M. LALLMAHOMED AND N. YERIGADOO, TECHNICAL OFFICER (SCIENTIFIC)

(a) *Race Differentiation*

11.02 There are three known races of *Pseudomonas solanacearum*. Race 1 is known to affect tobacco, tomato and many solanaceous plants. Race 2 causes bacterial wilt of bananas, *Heliconia* spp. and other musaceous hosts. Race 3 affects potato and tomato but has limited pathogenicity to tobacco. Previous work has established the existence of Races 1 and 3 of the pathogen in Mauritius. Following inoculation to *Musa balbissiana* which is the known differential host for Race 2, it is confirmed that the banana race of *Pseudomonas solanacearum* does not exist in Mauritius.

(b) *Rotation Experiments*

Rotation experiments were further performed during the year at Pamplemousses Experiment Station and Reduit Plant Pathology trial plot. The experiments were performed to study *(a)* the incidence of bacterial wilt under multicrop and monocrop cropping sequences. *(b)* Virurlence of pathotypes under the selection pressure of different cropping systems. The disease incidences of bacterial wilt in the indicated cropping sequence at Pamplemousses Experiment Station is tabulated below. Figures indicate mean percentage values of wilted plants.

CROPPING SEQUENCE

	April–September 1974	*Oetober 1974 February 1975*	*April–September 1975*	*November '75 Feb. '76*
Tomato (local) – Groundnut (Shulamit)—groundut—groundnut	96.26[a]	14.9[c]	27.55[d]	33.13[c]
Ginger—Potato (Up to Date)—Potato—Potato	2.16[g]	24.6[b]	55.25[c]	99.87[a]
Bean Tobacco (Yellow Mammoth) Tobacco—Tobacco	7.38[f]	98.54[a]	86.06[b]	99.81[a]
Tobacco–Bean—Bean—Bean ...	74.50[b]	8.28[d]	2.13[f]	4.99[d]
Groundnut–Tomato—Tomato—Tomato	23.40[d]	100[a]	94.88[a]	98.89[a]
Fallow—Potato (Marilyn)—Potato (M)—Eggplant*	—	2.23[e]	21.0[e]	96.45[b]
Potato (UTD)—Ginger–Ginger—Ginger	58.15[c]	0[f]	0[g]	0[e]
Potato (Marilyn)—Fallow—Fallow—Fallow	15.85[e]	—		
S. Error of difference between means ...	±0.19	±0.08	±0.09	±0.13

*Eggplant var. Black Beanty was substituted for Potato Marilyn which grows poorly during the summer (Oct.–Feb. season.

The incidences of Bacterial wilt in the various crops at Reduit are indicated in the table below:

Cropping Sequence

	Nov. 73—March 74	Apr.—Sept. 74	Apr.—Sept. 75
Groundnut(Shulamit)—groundnut—Tomato(local) ...	0[e]	0.41[e]	100[a]
Potato (UTD)—Potato—Fallow	49.5[b]	31.0[c]	—
Fallow—Fallow—Potato (UTD)	—	—	42.4[c]
Tomato—Tomato—Groundnut	77.3[a]	100[a]	2.75[f]
Potato (Marilyn)—Potato—Bean	3.46[d]	9.73[d]	8.61[ed]
Bean—Bean—Potato (Marilyn)	0[e]	2.95[e]	29.12
Tobacco (Yellow Mammoth)—Tobacco—Tobacco ...	15.0[c]	41.9[b]	76.45[b]
S. Error of Difference between means	±0.18	±3.69	±0.32

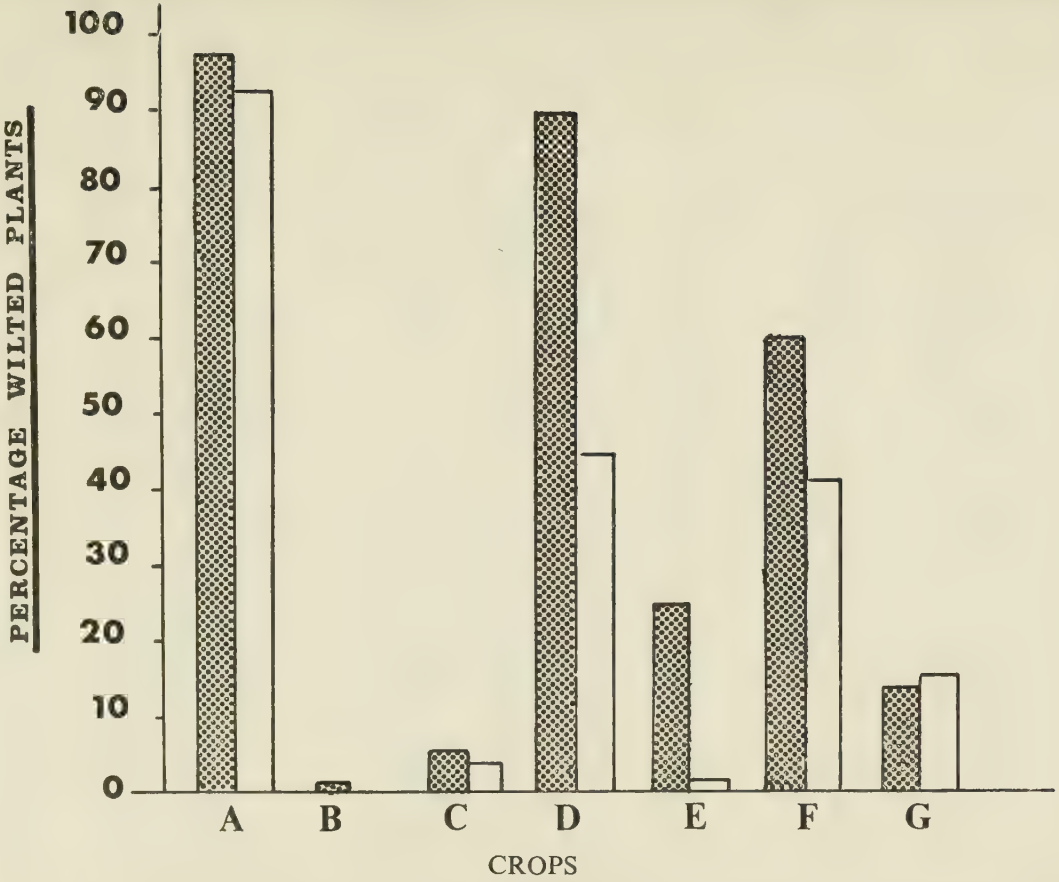
Results obtained indicate the high virulence of the tobacco race at Pamplemousses. Mean percentage values of wilted plants calculated for all seasons as illustrated in Fig. 1 below show the relative incidence of the wilt pathogen to different crops in different localities. There is an indication that continuous cropping under tobacco or potato increases the virulence of the bacteria towards that host.

Pyricularia Blight of Ginger and Turmeric

M. Pillay (Scientific Officer) and M. Chinapen
(Technical Officer, Scientific)

11.03 Investigations on the two *Pyricularia* isolates obtained from common ginger *(Zingiber officinale* Roscoe) and turmeric *(Curcuma domestica* Valeton) respectively, last year, continued with satisfactory progress. Yeast extract agar (Misato's medium) was found to be the best of several media tried for abundant sporulation of both isolates. Considerable amounts of inoculum were produced on this medium from stock cultures, maintained on Potato Dextrose Agar, since April 1974.

11.04 Several sets of ginger and turmeric plants at different stages of growth were inoculated with conidial suspensions of fresh isolates obtained in March 1975, in the greenhouse. The two *Pyricularia* isolates proved to be pathogenic on both turmeric and ginger. Differences in cultural characteristics of these isolates have, however, been observed. A few rice plants were inoculated with the ginger isolate in January 1975. No symptoms appeared.



A—TOMATO LOCAL
B—GINGER
C—BEAN LONG TOM
D—TOBACO Y. M.
E—GROUND NUT SHUL.
F—POTATO UP TO DATE
G—POTATO MARILYN

Fig 1 Incidence of bacterial wilt to different crops in two localities, Pamplemousses, (Cross-hatched bars) and Reduit (open bars).

Tristeza Disease Survey

G. M. Lallmahomed, N. Rajcoomar, Scientific Officer (Agronomy Division and N. Yerigadoo, Technical Officer (Scientific)

11.05 Following his visit to the citrus plantations of Mauritius, Vogel* presented evidence of the existence in Mauritius of a virulent strain of tristeza most probably introduced with budwood from Taiwan. A survey of Citrus plants was conducted in Government Experiment Stations and in private orchards from 2nd to 20th June, 1975. It was evident that only plants grafted on Rangpur lime were showing severe symptoms of Tristeza at Richelieu Taiwan orchard. Varieties Mineola Tangelo and Ponkan Mandarin grafted on Rangpur lime were intolerant to tristeza. Recommendations were as follows:

(a) Plants showing symptoms of stem pitting and of exorcortis should be uprooted and destroyed immediately.

(b) Plants on unknown rootstock and presenting healthy conditions should be retained for future observations.

11.06 Certain Rootstock/Scion combinations were recommended for further observation and guidelines for future action in citriculture were suggested.

Virus Diseases of Crops (M. I. Dossa and S. Beni Mahdu)

Transmission Experiments with PVX

11.07 Mild vein banding symptoms were noticed on tobacco plants (*N. tabacum* cv. NC 95) at Pamplemousses. The complexity of the problem is exemplified by the fact that "Mild strains of the virus (Potato virus X) produce only a faint mottle very similar to vein banding caused by the same plant (tobacco) by Potato virus Y" (Smith, 1957). However, it was possible to positively identify the virus by its reaction on *Datura stramonium, Gomphrena globosa, Chenopodium amaranticolor* and *Solanum tuberosum.* (Source: Smith, K. M., 1957. A Textbook of Plant Virrus Diseases. J. & A. Churchill Ltd. London).

Soybean common mosaic

11.08 Symptoms indicative of soybean common mosaic were observed at Pamplemousses Experimental Station and at Central Experiment Station, Reduit, before the flowering stage of the plants. It has been possible to transfer the virus by rubbing the expressed sap (in 0.1 M Phosphate buffer pH 7.0) on soybean leaves dusted with carborundum mesh 400. Further transmission studies and serological investigation are in progress.

**Vogel, R. 1975. Problemes phytosanitaires poses a L'Agri/uniculture Mauricienne. I.F.A.C.—Corse.*

Chemical Control of Plant Diseases

Ginger blight (Pyricularia sp.)

M. Pillay (Scientific Officer) and Mr. Chinappen
(Technical Officer Scientific)

11.09 Benlate and Dithane M-45 were tested, separately and in combination against *Pyricularia* blight of ginger in a field trial at the Development Works Corporation Mixed Farming Project Site, Dubreuil.

11.10 Ginger setts were planted in October 1974 in 6-row plots, 15 feet long and 1½ feet apart. Treatments were replicated four times in a complete randomized block design. An unsprayed guard row was left between plots to diminish interplot interference. A total of 10 fungicide applications were made, starting on 18 March 1975 and ending on 28 May 1975 at 5 to 10 day intervals, weather permitting.

11.11 Signs of infection, first noted in the beginning of March, were evident throughout the field at the time of the first spray. Disease severity was assessed every fortnight from 4 April to 16 May 1975 as follows: The fourth leaf of 20 random shoots from the two middle rows of each plot were plucked and brought to the laboratory in labelled plastic bags; an absolute count of the number of infective spots on each of these leaves was immediately made and the average number of spots was determined for each replicate. Coalescing of lesions on leaves and shoots of plants in the control plots, in the beginning of May, was followed by a complete yellowing and gradual drying up of plants in these plots. At harvest on 30 July, 1975, many plants in the control plots had completely died. All treatments gave significantly better results than control.

Treatment	*Rate per litre*	*No. of spots / 4th leaf (mean of 4 repls)*				*Yield (mean of 4 repls.r 30 July ; kgs green ginger)*
		4 *April*	*18 April*	*2 May*	*16 May*	
C Dithane M–45 ...	3 g	6.15 a	27.87 a	30.52 ab	21.24 a	47.18 a
D Dithane M–45 + Benlate ...	2 g + 0.5 g	5.84 a	26.23 a	46.66 bc	36.53 abc	45.56 ab
A Dithane M–45 ...	2 g	8.83 a	44.87 bc	44.12 abc	31.23 ab	40.00 bc
E Dithane M–45 + Benlate ...	1 g + 0.25 g	6.25 a	36.32 abc	54.37 c	45.34 bc	39.06 bc
B Benlate	0.5 g	9.82 a	32.96 ab	52.68 c	42.40 bc	36.50 c
F Control	—	38.34 b	163.60 d	200 d	200 d	27.68 d
S. E.	—	±5.58	±5.35	±6.15	±4.20	±2.16

Means with the same letter are not significantly different at the 5% level according to Duncan's multiple range test.

TABLE I

Disease counts, means and standard errors

% Initial Seed infection	Foliar treatment	No. of plants showing halo blight symptoms				No. of plants carrying infected pods	
	NT	6.10.75	20.10.75	30.10.75	7.11.75	30.10.75	7.11.75
0		2.5	12.5	34.8	37.0	9.5	30.8
	T	1.0	2.3	2.5	4.0	0.3	0.5
1	NT	3.8	12.3	33.3	35.0	13.0	22.3
	T	1.8	3.3	5.3	6.5	0.3	1.8
3	NT	2.0	14.8	30.8	29.5	7.0	21.3
	T	1.5	3.5	3.8	4.5	0.8	2.8
5	NT	3.8	14.5	33.3	36.5	11.8	27.0
	T	0.0	2·3	5.3	5.8	0.3	3.5
10	NT	3.5	23.0	36.3	41.8	14.8	44.0
	T	1.3	3.3	4.3	4.8	0.5	2.8
S.E.		0.7	3.0	8.5	8.9	4.2	6.3

Control of Citrus Greening with Tetracyline

D. Tourabally, Senior Technical Officer (Scientific)
N. Yerigadoo, Technical Officer (Scientific) and G. M. Lallmahomed

11.12 Citrus Plants (Oranges and Tangerines) were treated with tetracycline in January and February at three different localities namely St. Felix (27 plants), Reduit Experiment Station (34) and Plaisance Experiment Station (35). Tetracycline hydrochloride at the rate of one litre of a 500 ppm solution was injected into the stem of each plant. Bark samples were tested for the presence of the fluorescent marker gentiosyl glucose before and periodically after treatment. Unfortunately cyclone *Gervaise* destroyed or damaged several plants at all localities so that yield of fruits was very poor and comparisons with the yield of previous seasons could not be made.

Bean Fungicide Trials

J. Bucha, Scientific Officer and S. N. Abdoula,
Technical Officer (Scientific)

11.13 Halo blight *(Pseudomonas phaseolicola* Dowson) control on bean of variety 'Long Tom'.

11.14 Seeds were planted on November 11, 1975 at Pamplemousses Experiment Station and on October 30, 1975 at Barkly Experiment Station, in 6-row plots. 6m long and replicated four times in a randomized block design. The plots were 60 cm apart and planting distance was about 7.5 cm.

At the time of sowing, fertilizers were applied in furrows at the following rates:

(i) Sulphate of ammonia—100 kg/Arp.
(ii) Simple superphosphate—200 kg/Arp.
(iii) Muriate of potash—125 kg/Arp.

11.15 Lannate was applied at the rate of 0.5 g/l against Melanoa-*gromyza*. The insecticide was sprayed on November 11, 1975 at Barkly Experiment Station and on November 25 and December 1, 1975 at Pamplemousses Experiment Station.

11.16 Fungicide and insecticide sprayings were performed on November 19 and December 3, 10, 20 and 27, 1975 at Barkly Experiment Station and on Decemberr 11, 16, 22 and 31, 1975 at Pamplemousses Experiment Station.

11.17 No halo blight appeared at Pamplemousses. However a disease count was taken on December 30, 1975 at Barkly. Ten plants chosen at random were used for scoring halo blight infected pods out of the total number of pods collected. The weight of the pods per plot was also noted. Yield data, as dry seeds, were taken on January 19, 1976 at Barkly and on January 30, 1976 at Pamplemousses.

11.18 Results are tabulated below.

Treatment and rates	*Yield/25 plants dry seeds in g.*		*Barkly Expt. Station*
	Pamplemousses Expt. Sta.	*Barkly Expt. Station*	*% infected pods per 10 plants*
Thiabendazole 38.8 W.P. 0.5g/+lannate 90 WP 0.5 g/l	298.00	456.00	1.44[a]
Thiabendazole 38.8 WP 0.5g/1+Dithane M45 80 WP 2g/1+Lannate 90 WP 0.5g/1	275.50	481.00	17.10[cd]
Thiabendazole 38 8 WP 0.5g/1+ Benlate 50 WP 0.5g/1+Lannate 90 WP 0.5g/1	273.00	406.00	6.34[ab]
Thiabendazole 38.8 WP 0,5g/1+Copper Oxychloride 31 WP 2g/1+Lannate 90 WP 0.5g/1	294.25	485.00	6.65[ab]
Copper Oxychloride 31 WP 2 g/1+Lannate 90 WP 0.5g/1	273.75	402.00	13.55[bcd]
Copper Oxychloride 31 W 2g/1+Dithane M45 80 WP 2g/1+Lannate 90 WP 0.5g/1	298.50	526.00	2.40[a]
Copper Oxychloride 31 WP 2g/1+Benlate 50 WP 0.5g/1+Lannate 90 WP 0.5g/1	304.25	476.00	1.99[a]
L ithane M45 80 WP 2g/1+Lannate 90 WP 0.5g/1 ...	303.00	525.00	22.52[de]
Benlate 50 WP 0.5g/1+Lannate 90 WP 0.5g/1 ...	271.25	508.00	11.96[bc]
Beniate 50 WP 0.5g/1+Dithane M45 80 \ P 2 g/1 +Lannate 90 WP 0.5g/1	213.25	479.00	22.25[de]
Lannate 90 WP 0.5g/1	312.00	528.00	26.88[e]
S.E.	14.58	27.95	2.97

Letters in common indicate no significance by the Duncan Multiple Range Test at the 5% level.

11.19 There was no significant increase in yield following any of the treatments. Copper oxychloride in combination with Thiabendazole or Benlate or Dithane M 45 gave the best protection against halo blight infection. Thiabendazole with Benlate or alone was found to be equally effective.

11.20 Halo blight *(Pseudomonas phaseolicola* Dowson) on bean—Variety 'Victory'.

11.21 Seeds were sown on September 10, 1975 at Barkly Experiment Station, in a simple split plot design with four replications. Seeds to be planted were mixed with a known proportion of infected ones. Halo blight seed infection levels were the main treatments with foliar sprays as subtreatments. Foliar sprays consisted of Copper oxychloride 31 WP (2 g/1.)/ Benlate 50 WP (0.5 g/1.)/Lannate 90 WP (0.5 g/1.) coded T and Lannate 90 WP (0.5 g/1.) coded NT. Each plot consisted of six rows 30 cm apart and 6m long. The distance between plots was 60 cm and planting distance was about 7.5 cm. Fertilizer applications were outlined in Experiment 1 above. On September 18, 1975 Lannate was applied at the rate of 0.5 g/1. against *Melanoagromyza*. Foliar sprayings were initiated on September 27, 1975 and carried out eight times at 7 to 10 days intervals.

11.22 The number of plants showing halo blight symptoms was counted on October 10, 20 and 30 and November 7. At the last two dates the number of plants carrying infected pods was counted as well. The experimental plot was harvested on December 18, 1975 as dry seeds and subsequently the proportion of infected seeds was determined.

11.23 Results are presented in Tables 1 and 2 below.

TABLE 1

Disease counts, means and standard errors

% *Initial seed infection*	*Foliar Treatment*	*No. of plants showing halo blight symptoms*				*No. of plants carrying infected pods*	
		6.10.75	20.10.75	30.10.75	7.11.75	30.10.75	7.11.75
0	NT	2.5	12.5	34.8	37.0	9.5	30.8
	T	1.0	2.3	2.5	4.0	0.3	0.5
1	NT	3.8	12.3	33.3	35.0	13.0	22.3
	T	1.8	3.3	5.3	6.5	0.3	1.8
3	NT	2.0	14.8	30.8	29.5	7.0	21.3
	T	1.5	3.5	3.8	4.5	0.8	2.8
5	NT	3.8	14.5	33.3	36.5	11.8	27.0
	T	0.0	2.3	5.3	5.8	0.3	3.5
10	NT	3.5	23.0	36.3	41.8	14.8	44.0
	T	1.3	3.3	4.3	4.8	0.5	2.8
S.E.		0.7	3.0	8.5	8.9	4.2	6.3

TABLE 2

AVERAGE YIELD OF DRY SEEDS IN G. PER 25 PLANTS AND AVERAGE PERCENTAGE INFECTED SEEDS AT HARVEST, MEANS AND STANDARD ERRORS, N=4

% Initial seed Infection	*Foliartreatment*	*Yield*	*% Infected seeds at harvest*
0	NT	657.3	23.26
	T	594.3	21.25
1	NT	667.5	22.26
	T	590.3	19.27
3	NT	556.8	22.85
	T	621.3	16.07
5	NT	657.5	21.11
	T	627.3	14.68
10	NT	536.3	24.87
	T	633.0	17.38
Standard Error		38.4	2.42

11.24 The main treatments i.e. percentage initial seed infection, were found to be insignificant with respect to yield, disease incidence and percentage of infected seeds at harvest. On the other hand, the sub-treatments were highly significant with respect to disease incidence and percentage of infected seeds at harvest. The latter was reduced by about 5 per cent on the total yield through the Copper oxychloride/Benlate treatment. The chemicals did not affect the total yield significantly.

PEA FUNGICIDE TRIALS

J. BUCHA, SCIENTIFIC OFFICER AND S. N. ABDOULA, TECHNICAL OFFICER (SCIENTIFIC)

11.25 Control of *Ascochyta* and powdery mildew *(Erisyphe polygoni* De Candolle) of pea *(Pisum satvium* L.)

11.26 Local pea seeds were planted at Reduit Central Experiment Station on June 20, 1975, and at Plaisance Experiment Station on June 25, 1975, in 6-row plots, 3m long in a 6×6 Latin Square design. The distance between rows was 60 cm. and that between plots 90 cm. Seeds were planted at about 6.5 cm. At the time of sowing fertilizers were applied in furrows at the following rates:

(i) Sulphate of ammonia—75 kg/Arp.,

(ii) Simple superphosphate—175 kg/Arp.

(iii) Muriate of potash—75kg/Arp.

11.27 Lannate, was applied five times at 7-day intervals, at the rate of 0.5 g/l. against Acarines and leaf tiers. Spraying was started at Reduit Central Experiment Station on July 3 and at Plaisance Experiment Station on July 10, 1975. A fortnight after sowing, sulphate of ammonia was applied at the rate of 75 kg/Arp. as topdressing.

11.28 Fungicide and insecticide sprayings were performed on August 12, 19 and 28 and September 3, 10 and 17, 1975 at Plaisance Experiment Station and on August 20 and 29 and September 4, 11 and 18, 1975 at Reduit Central Experiment Station.

11.29 Disease assessment and harvest of mature green pods were carried out at Reduit Central Experiment Station on September 23, 1975 and at Plaisance Experiment Station on September 26, 1975. Twenty-five plants per plot taken at random were used for estimating yield while disease assessment was performed upon fifty random leaflets from the upper 8 leaves of the pooled 25 sample plants from each plot. Percentage leaflet area covered by *Ascochyta* spots and powdery mildew was assessed by comparing with prepared charts showing area coverage successively progressing by 10 per cent. Fifty random green mature pods from each plot was scored for *Ascochyta* spots on the basis of presence or absence.

11.30 Results are shown in the following table.

PEA FUNGICIDE TRIALS

Treatments	*Reduit Central Experiment Station*				*Plaisance Experiment Station*			
	Yield in g. of pod per 25 plants	*% Infected pods*	*% leaf area infected by Ascochyta*	*% leafarea infected by powdery mildew*	*Yield in g. of pods per 25 plants*	*% Infected pods*	*% leaf area infected by Ascochyta*	*% leaf area infected by powdery mildew*
Benlate 50wp 0.5g/1 + Lanate 90wp 0.5g/1	487.5^{bc}	20.4^{b}	44.1^{b}	8.1^{a}	310.4*	22.5^{de}	30.4^{c}	17.1^{b}
Thiovit 80wp 2g/1. + Lannate 90wp 0.5g/1	408.3^{c}	27.1^{c}	41.8^{b}	21.0^{b}	291.7	15.8^{c}	26.1^{b}	12.0^{a}
Benlate 50wp 0.5g/1. + Thiovit 80wp 2g/1 + Lannate 90wp 0.5g/1.	554.2^{ab}	10.8^{ac}	30.3^{a}	7.4^{a}	364.6	10.2^{b}	20.5^{a}	12.4^{a}
Copper oxychloride 31wp 2g/1. + Lannate 90wp 0,5g/1.	529.2^{ab}	24.6^{bc}	49.8^{c}	15.8^{b}	218.8	22.3^{d}	40.6^{e}	21.9^{c}
Copper oxychloride 31wp 2g/1. + Benlate 50wp 0.5g/1. + Lannate 90wp 0.5g/1.	504.2^{a}	8.9^{a}	32.6^{a}	6.9^{a}	256.3	6.9^{a}	34.6^{d}	11.3^{a}
Lannate 90wp 0.5g/1.	475^{bc}	34.4^{d}	64.1^{d}	30.9^{c}	227.1	23.4^{e}	62.0^{f}	20.2^{c}
S.E.	32.5	3.0	1.4	2.4	50.1	0.8	0.2	1.0

*No significant difference among treatments.

Percentages converted to equivalent angles for analysis.

The small letters indicate Duncan's multiple range groupings of treatments which do not differ significantly at the 0.05 level.

11.31 The result suggests that a Benlate/Thiovit or a Benlate/Copper oxychloride treatment affords better protection against both *Ascochyta* and powdery mildew and may also ensure a better yield.

Occurrence of Diseases

Bean

11.32 Several cases of bacterial and sclerotial wilt were recorded during the year in the Eastern districts.

Onion

11.33 Pink root rot was very severe and destroyed many plantations in the onion growing areas.

Ginger-blight

11.34 The *Pyricularia* blight of ginger first appeared in the wetter regions (Bois Cheri, Nouvelle France, etc.) soon after Cyclone Gervaise and assumed severe proportions in those regions in March. Growers who had attempted control with Dithane M-45, however obtained satisfying results (DWC Dubreuil and Nouvelle France). In the traditional growing areas (Crève Coeur, Montagne Longue) disease appeared rather late in the growing season with little consequence on yield.

11.35 The turmeric disease reported from Dubreuil in January last year and now known to be caused by a *Pyricularia* sp. reappeared in the same fields this year causing considerable damage on a 3-arpent field. It was also observed in Midlands, Curepipe (Experiment Station) and on isolated plants in Crève Coeur.

Tobacco—Virus Diseases

11.36 A survey of virus diseases of tobacco was undertaken and 72 fields were inspected. Areas visited include the following districts: Flacq; Pamplemousses, Rivière du Rempart and Port Louis. Cases of tobacco mosaic virus and vein banding were noted. Tobacco mosaic was by far the most common occurring practically in all the fields but more extensive and severe in the northern regions of the island. The differences in the severity of the mosaic symptoms observed can be partially accounted for on the basis of air temperature, different virus strains (?), plant age and nutrition (especially amount of nitrogen supplied). A severe case of frenching was noted at Poste de Flacq (cv Amarello). The 'disease' occurred in patches and were restricted to a small area. Tobacco plantation in the adjoining areas showed no evidence of frenching.

11.37 The sap of the frenched leaves were rubbed on the leaves of *N. Tabacum,* petunia, cucumber, *Chenopodium quinoa,* bean varieties Prince and Pinto. No symptoms were observed on any of the test-plants (which were dusted with carborundum mesh 400 prior to application of sap).

11.38 Frenching is not infectious and is known to develop in the presence of toxins of *Bacillus cereus,* in dry soils and in the absence of available nitrogen. Due to lack of facilities, it has not been possible to determine the herbicide content, if any, of the soil.

New Records

Anthurium

11.39 Bacterial wilt *(Psudomonas solancearum)* newly recorded on anthurium was severe in a few localities. Those areas were waterlogged and the disease did not progress further upon proper drainage of the waterlogged soil. Biochemical and pathogenicity tests carried out on the *anthurium* isolate revealed that the isolate belong to the Potato race and to biotype 3 similar to isolates of *Pseudomonas solancearum.*

Groundnut Rust

11.40 *Puccinia arachidis* has been found again after an absence of some 35 years. A rapid survey indicated that this rust disease of groundnut was present at Reduit and in the Northern areas. Pathogenicity tests indicate that varieties Cabri and Shulamit are equally susceptible to the disease.

Assessment of Resistance to Main Diseases

Tobacco Bacterial Wilt Assessment

N. Yerigadoo, Technical Officer (Scientific) and G. M. Lallmahomed

11.41 A bacterial wilt assessment was performed on plants in a tobacco variety trial performed by the Agronomy Division during the first season of 1975. Disease ratings were classified into five different clssses (0, 1, 2, 3, 4) and converted into disease indices using the following formula:

$$\text{Disease Index} = \frac{\text{No. of plants in each class} \times \text{corresponding unmercial grade} \times 100}{\text{Total No. of plants} \times \text{Maximum numerical grade}}$$

Result are tabulated below:

Variety	*Mean Disease Index Average of 4 replicated*
SC 71 ...	... 66.50a*
NC 95 ...	... 16.00b
Y.M. ...	... 79.75a
S.C. 66 ...	... 19.75b
L.S.D. 5%	... 14.58
1%	... 22.07

It is concluded that varieties SC 66 and NC 95 are more resistant to bacterial wilt than varieties Yellow Nammoth and SC 71.

*Letters in common indicate Duncan's multiple range groupings of varieties which do not differ significantly at the 1% level.

Resistance of newly introduced Tobacco Variety to Tobacco Mosaic Virus (TMV)

M. I. Dossa, Scientific Officer and S. Beni-Madhu, Technical Officer—(Scientific)

11.42 *N. tabacum* cv. SC 72, currently on trial by the Agronomy Division, was mechanically infected with tobacco mosaic virus and found to be relatively resistant as the virus causes only the production of local lesions. The following scheme was used: TMV from *N. tabacum* cv. Yellow Mammoth was transferred to *N. tabacum* var SC 72. This resulted in the formation of local lesions which when subsequently transferred to *N. tabacum* cv. Yellow Mammoth reproduced the original mosaic symptoms. At every stage, other test-plants (such as bean cv. Pinto, *Datura stramonium,* etc.) were used.

Preliminary Disease Observation upon Bean and Pea varieties introduced by the Private Sector

J. Bucha (Scientific Officer)

11.43 Observations on the following bean varieties for resistance to diseases were made: Tender Green Improved, Top Crop, Kinghorn Waxpod—Sutton 5538, Chevrier Vert—Sutton 5540, Prince—Sutton 5521, Sprite (stringless)—Sutton 5544, Comtesse de Chambord—Sutton 5547, Green Kimberley, Flageolet—Chevrier Vert, Palmares, Mangetout Tender Green, Decor, Tezier D'Or, Yates Top Crop, Yates Victory, Yates Contender, Saison Nain—Eros Pied and S. Rames Mangetout.

11.44 Decor and S. Rames Mangetout were highly susceptible to *Rhizoctonia* and rust. Saison Nain—Eros Pied and Yates Top Crop were tolerant to *Rhizoctonia,* rust and halo-blight. The remaining varieties were tolerant to *Rhizoctonia* and halo-blight but were susceptible to rust in varying degrees.

11.45 On ground of disease tolerance and growth, Tender Green Improved, Green Kimberley, Yates Top Crop and Yates Victory were found to be most promising.

11.46 Pea varieties observed for resistance to the common diseases were: Plein le Panier, Telephone, Ecosser Tezier Regal, Clamant 3 Gousses, Yates Victory, Yates W. P. Massey, Progress No. 9, Dark skinned Perfection, Kelvedon Wonder, Stratagem, Pioneer and Serpette Guilloteaux.

11.47 Plein le Panier, Ecosser Tezier Regal, Clamant 3 Gousses, Progress No. 9, Dark Skinned Perfection, Kelvedon Wonder, Stratagem and Pioneer were highly susceptible to *Fusarium*. Yates Victory, Yates W.F. Massey, Serpette Guilloteaux and Telephone, were tolerant to *Fusarium* and powdery mildew *(Erisyphe polygoni* De Candolle). Serpette Guilloteaux showed a slight attack of *Ascochyta*.

Third International Soyabean Variety Evaluation Experiment, 1975

11.48 A disease assessment was carried out at Royal Botanic Gardens Pamplemousses, (Expt. No. 488) and Central Experiment Station, Reduit (Expt. No. 390) on 15 soybean varieties at the time of flowering. Soybean common mosaic (as identified by transmission and microprecipitin tests) was found to be very common and, at Royal Botanic Garden, occurred on all varieties except Improved Pelican which was also free from the virus at Central Experiment Station.. The following vars susceptible: Jupiter, Hampton 266A, Hardee, Cobb, Bossier, Davis, Tracy, Forrest, Columbus, Clark 63, Woodworth, Williams, Calland, Semmes. The following varieties were susceptible to rootknot nematodes *(Meloidogyne* spp.*)* : Improved Pelican, Bossier and Semmes, Assessment based on root galling was made on roots after harvest.

Quarantine Services

11.49 During the year, 594 import permits were issued for the importation of plants. Phytosanitary certificates issued for the exportation of fresh flowers, ginger and ornamentals numbered 2097. Prior to landing of imported frozen animal products, 412 landing permits were issued on behalf of the Division of Veterinary Services. At the Parcels Post Office, 61 items of plant material were intercepted, 9 were destroyed, 22 were released after treatment and presentation of the appropriate phytosanitary certificates while 30 are still awaiting collection.

11.50 Phytosanitary control was exercised during the arrival of 2509 planes and 310 ships. Out of 1095 items of plant and animal material intercepted at the airport, only 30 were released and those which did not satisfy our requirements were destroyed.

11.51 Plants introduced into Mauritius and released from quarantine during the year included the following:

Mulberry—Varieties S41 and S54 from India.

Strawberry var. Senga Senga from France.

Banana var. St. Jacques from Seychelles.

Green manure *(Sesbania sesban)* from China.

Tobacco vars. SC 72 from USA and SCR from Rhodesia.

Jadevine from S. Africa.

Red ginger *(Alpinia purpurata)* from Jamaica.

Cocos weddeliana from France.

Rice vars. Kwang Loo and Red Plum Zao from China.

72 vars. of rice from Madagascar.

11.52 A report on the phytosanitary activities of Mauritius was prepared and submitted to the Scientific Secretariat of the Inter African Phytosanitary Council (O.A.U.).

MISCELLANEOUS

Overseas Missions

11.53 Reports on the following overseas missions have been prepared and submitted by the Divisional Scientific Officer:

Rodrigues—Plant disease situation (6-10 March, 1975) C.A.B. Review conference and Commonwealth conferences in Plant Pathology and Helminthology held in London from 1st—31st July, 1975.

XII. Agricultural Chemistry Division

HEAD OF DIVISION: S. BELCOURT, DIVISIONAL SCIENTIFIC OFFICER UP TO 30.11.75

OFFICER IN CHARGE SCIENTIFIC OFFICER L. C. LAM THUON MINE AS FROM 1.12.75

12.01 During the year 1975, the Division undertook a large variety of analyses from different divisions of the Ministry such as Animal Production, Plant Pathology, Agricultural and Extension Service, and from the Ministry of Fisheries as well as some odd analyses from private sector.

12.02 *Soil*

(a) Soil from sugarcane planters throughout the island, sampled by the Extension Service, was analysed for pH, N, P, K, to assess its fertility status in order to recommend appropriate fertilizer application. The results were established as follows:

(i) pH—The table below shows the variability of acidity of soils in different districts:

District	*pH*
Pamplemousses	5 to 6
Grand Port	5 to 6
Savanne	average of 7
Flacq	4 to 8
Plaines Wilhems	5 to 6
Moka	4 to 5
Riviere du Rempart... ...	7.4 to 8

(ii) *Nitrogen*—The nitrogen content in the Pamplemousses region varies from 0.21 per cent to 3.2 per cent with a mean of 0.28 per cent and that in Grand Port region has a level of 0.3 per cent on average. No conclusions can be drawn for the soil in the Savanne, Flacq, Plaines Wilhems and Rivière du Rempart regions as too few samples were analysed for nitrogen content. However, soil from Moka was found to have the highest nitrogen content with an average of 0.6 per cent.

(iii) *Phosphorus*—In general, the soil from all the districts was found to be poor in available phosphorus with a range of 13 to 55 ppm.

(iv) *Potassium*—The average potassium content in each district was found to be of a satisfactory level ranging from 0.5 to 2.5 me/100g of soil, except in Moka where the level was low, the range being between 0.2 and 0.5 me/100g of soil.

(b) Soil samples for Agricultural Division relating to various experiments such as garlic, onion and tobacco and for soya bean experiment were analysed for pH, nitrogen, phophorus, potassium, organic matter and cation exchange capacity.

12.03 *Crops*

(a) Sugarcane

In association with the experiments carried out by the Agricultural Division—investigating the effects of (i) cutting interval (ii) planting date (iii) plant population on the total yield of sugarcane, samples of sugarcane tops and stalks were regularly received for the determination of dry matter, protein and fibre. The experiment is still in progress.

(b) Grass

Samples of eight different grass species were analysed for dry matter, fibre and protein in connection with the experiment carried out by the Agricultural Division. The objective was to compare the suitability of the species as a source of fodder. The experiment is still in progress.

(c) Leguminous Cover Crops

In relation to the growth studies of leguminous cover crops and the fertilizer trial experiment on the *Vigna Marina* Species, Samples of the legumes were sent by the Agricultural Division for the analysis of dry matter, protein, fibre, ash, calcium and phosphorus. The experiment is still in progress.

(d) Setaria

In collaboration with the Agricultural Division for the experiment set up at Curepipe Experiment Station to regenerate the fertility of soil by the application of basalt dust and calcium silicate slag, both samples of soil and setaria were taken after each cut for analysis—the former being for the determination of pH, nitrogen, phosphorous, potassium and silica while the latter for the determination of dry matter ash and silica.

(e) Soya Beans

Samples of soya plant and nodules from Pamplemousses and Reduit Experiment Stations were analysed for dry matter and nitrogen in order to determine the effect of nitrogen on soya beans with or without inoculation.

(f) Tobacco

The survey on flue cured tobacco leaves of two varieties namely NC 95 and Yellow Mammoth was completed. For the second season 1974, i.e. from November 1974 to January 1975 only sodium and potassium were analysed on the dried samples from Richelieu Experiment Station while for the first season 1975, i.e. from July to August 1975, the analyses of sodium, potassium, calcium, magnesium and chloride were made on the samples from Richelieu Experiment Station, Ile d'Ambre and Flacq.

(i) For the second season 1974-75.

The results obtained on the samples from Richelieu showed that the percentage of sodium varied from 0.05 to 0.14 and that of potassium varied from 1.2 to 3.6. There was in fact no difference between the two varieties.

(ii) For the first season 1975.

Nicotine was not analysed on the samples of 1975 since no variation was detected on the samples of previous years.

Potassium was found to decrease from the bottom to the top of the plant, varying from 1.0 to 4.0%. The range of variation was found to be the same for both varieties from the selected localities, except the NC 95 from Ile d'Ambre was found to vary from 0.8 to 3.0%.

In all localities and for both varieties, sodium was found to vary independently of the position of the leaf on the plant. The level of sodium was found to lie within the limits of 0.4 and 0.23% on Richelieu samples, 0.13 and 0.36% on Ile d'Ambre samples and 0.11 and 0.34% on Flacq samples.

Chloride was found to be very high for both varieties and in all localities. At Richelieu, the level varied from 3.7 to 5.0%, at Ile d'Ambre from 4.4 to 6.2% and at Flacq from 2.9 to 4.0%.

(g) Rice

(a) The rice project set up by the Chinese Agricultural Team at Belle Vue Farm necessitated the analyses of soil, chicken manure and cow manure. Soil was analysed for pH, nitrogen, phosphorus, potassium and organic matter and the manure for dry matter and N, P, K.

(b) In conjunction with the fertilizer trial and variety trial for rice experiments carried out at Queen Victoria, samples of soil were analysed for pH, nitrogen, phosphorus (total and available) and potassium.

12.04 *Feeds*

(a) The Animal Production Division started an experiment on Scum at Mon Desert Alma in September, 1975. The objective was (i) to determine the variation of protein and fibre contents when a specimen of the scum was allowed to decompose (ii) to determine how molasses would affect the protein and fibre contents over a certain period of time after they had been added to the decomposed scum. Hence samples were taken once a week for the analysis of protein and fibre contents. The experiment is still in progress.

(b) Prepared feeds as well as various other materials used either for feeding purposes at the Curepipe, Palmar and Richelieu Stations or for feeding experiments carried out by Animal Production Division were regularly checked for their feeding standards.

(c) Local maize samples were regularly collected at Livestock Feed Factory for the determination of moisture and molasses for the determination of brix. Raw materials for the manufacture of feeds were checked for their feeding standards and prepared feeds for their formulation.

(d) Fodder ensiled at Richelieu Livestock Breeding Station was regularly submitted as from November, 1975 for the determination of pH, brix, alchohol and acids with a view of studying its stability characteristics.

(e) A few samples of feeds and fodder were also received from the Extension Services Division for the assessment of the nutrient values such as minerals, protein and fat.

12.05 *Water*

The Ministry of Fisheries sent water samples from Curepipe Experiment Station for the analysis of nitrate phosphate, calcium, total alkalinity and ph and from Trou D'Eau Douce Camaron Hatchery for the analysis of alkalinity, total hardness, sodium and chloride—the former is related to the experiment of rearing sea water mullets in the fresh water while the latter is related to the Camaron Project. Some odd samples from the Hydrology Division were also analysed.

12.06 *Fertilizers*

Compound fertilizers, litter and compost were analysed for nitrogen, phosphorus and potassium while guano for phosphoric acid.

12.07 *Dippings*

Dipping baths sent by the sugar estates were analysed for arsenic acid.

PESTICIDE SECTION

L. C. LAM THUON MINE (SCIENTIFIC OFFICER)

12.08 *Pesticide Residues*

For the first quarter of the year 1975, the work on Pesticides was slowed down through the lack of vegetables and electricity failure after cyclone *Gervaise*. Generally pesticides residues were tested in crops, greening disease in citrus species and aflatoxin in groundnut cakes.

The following table shows the results of the pesticide residue analyses in crops collected at various localities throughout the year.

Crop	*Locality*	*Pesticides*	*Result*
Patoles ...	Barkly Expt. Stn.	Lebaycid, gardona	Negative
Cucumbers ...	Curepipe E.S.	Lebaycid, Lannate	Degradation products were suspected
Cucumbers ...	Curepipe E.S.	Gardona	Negative
Cabbages ...	Curepipe E.S.	Lebaycid, Lannate	Negative
Petsai ...	Curepipe E.S.	Dimecron	Negative
Golden Squashes	Curepipe E.S.	Lebaycid	Degradation product of Lebaycid was suspected
Bredes de Chine ...	Barkly E.S.	Lannate	Negative
Tomatœs ...	Richelieu E.S.	Gardona, M 45	Negative

These results although negative are not very reliable as a level of less than 1 ppm cannot be detected by Thin Layer Chromatography.

12.09 *Tea Project*

The tea foliar diagnosis project was started from the beginning of June 1975. Various equipments such as Atomic absorption Spectrophotometer, Flame Photometer, Visible Spectrophotometer, Chemical processing Unit, Digital printer and Automatic changer were set up and methods of soil and leaf analyses were studied.

12.10 *Citrus Greening Disease*

Some 147 samples of citrus species from various localities were examined. They all showed the presence of the greening symptom although they had been treated with tetracycline.

12.11 *Aflatoxin*

Groundnut cakes from Livestock Feed Factory were checked monthly for the presence of aflatoxin. The results obtained indicated no detectable level of aflatoxin except those obtained in January 1975 indicated a very low level of about 0.02 ppm.

Staff Movement for 1975

1. Mr. Ramanjooloo was appointed Scientific Officer on the 1st March, 1975.

2. Miss Wan Hok Chee assumed duty as technical officer on the 20th May, 1975.

3. Mr. Mardaymootoo (Scientific Officer) was transferred to the Milk Laboratory on the 20th June, 1975.

4. Mr. Mohungoo was promoted to Scientific Officer on the 16th October, 1975.

5. Mr. Belcourt (Divisional Scientific Officer) went on pre-retirement leave on the 1st December, 1975.

6. Mr. Lam Thuon Mine was appointed officer-in-charge on the 1st December, 1975.

The following table shows the number of samples analysed for the year 1975:

Samples	*No. of samples analysed*
Soil from small planters ...	... 85
Sugarcane tops and stalks ...	... 226
Grass and Leguminous Crops ...	... 86
Setaria	... 80
Setaria Soil	... 60
Soya beans	... 18
Tobacco	... 37
Rice soil	... 23
Garlic. Onion, Tobacco or bean soil	... 43
Scum	... 15
Prepared feeds	... 28
Various feeds and fodder ...	... 114
Local maize	... 330
Molasses	... 126
Raw materials for the preparation of feeds	... 34
Silage	... 77
Water	... 13
Fertilizers	... 42
Dippings	... 4
Crops for pesticide residue ...	... 21
Citrus Species	... 147
Groundnut cakes for aflatoxin ...	... 25

XIII. Dairy Chemistry Division

HEAD OF DIVISION: J. E. PABLOT, DIVISIONAL SCIENTIFIC OFFICER (DAIRY)

INTRODUCTION

13.01 The Dairy Chemistry Division has had its first full year within the Ministry of Agriculture, Natural Resources and the Environment. Its activities throughout the year have been mainly of consolidation rather than of extension; though some minor works have been initiated and are still being carried out.

Milk Survey

13.02 The Survey for determining the qualities of the milk of Mauritius continued throughout the year. The whole staff of the Division had some part to take in it. Some four hundred (400) small cowkeepers, distributed all over the island, were involved and three thousand five hundred and thirty nine (3,539) samples were collected and analysed for Density, Acidity, Total Solids, Fat, Proteins, Freezing-Point, Coliform and Total Bacteria counts. The average results for the year are given under:—

1. Density (Corrected to 15° C)	... 29.0
2. Titrable Acidity	... 17.0° D
3. Fat content	... 3.5 %
4. Total solids	... 11.65 %
5. Solids-not-fat (By difference)	... 8.15 %
6. Proteins	... 3.1 %
7. Californ Count/ml ...	... 6.3×10^2
8. Total Bacteria Count/ml ...	... 1.7×10^8
9. Freezing Point	... –0.530°C

Milk from Pakistani Sahiwal Cows

13.03 The morning and evening collections of the milk of the fifteen (15) Pakistani cows at Abercrombie Station, were continued up to the 1st February, 1975, after which date the cows were dried. Four hundred and forty eight (448) litres were collected and sent for pasteurisation, to the Centre at Curepipe. The pasteurised milk was bulked with the pasteurised milk from the Livestock Breeding Station and then distributed to the Government hospitals. Daily samples of the raw and pasteurised milk were taken and analysed for: Density, Fat, Proteins, Coliform and Total Bacteria. The average results for the month of January were as follows:

Raw and Pasteurised Milk

Fat	3.91%
Proteins	3.66%
Density (corrected to 15°C)	30.0

	Raw	*Pasteurised*
Coliform Count/ml ...	35×10^2	Nil
Total Bacteria count/ml ...	97×10^5	65×10^3

Pasteurisation Centre, Livestock Breeding Station, Curepipe

13.04 The staff of the centre comprised a Field Assistant, Mr. S. Jaggurnauth and four Livestock Attendants. The centre collected, stored, pasteurised and distributed milk to the hospitals. Seventy-two thousand nine hundred and seventy seven (72,977) litres of milk were handled. It is to be regretted that six thousand nine hundred and sixty four (6,964) litres had to be dispatched raw through mechanical and electrical faults occurring on the pasteurisation equipment. A close daily control was exercised on the quality of the milk. Samples of both the incoming raw milk and the outgoing pasteurised milk were analysed and the results for a random taken day were as follows:

Raw Milk

Density (corrected to 15°C)	30.
Fat	3.75 %
Freezing Point	–0.554°C
Proteins	3.50%
Coliform Count/ml	$13. \times 10^3$

Pasteurised Milk

Phosphatase test	Negative
Fat	3.7%
Density (corrected to 15°C) ...	30.
Proteins	3.4%
Freezing Point	—0.552°C
Coliform Count/ml ...	Nil
Total Bacteria/ml ...	31 X 10^3

13.05 The milk was sold to the Ministry of Health at seventy five (75) cents/litre for pasteurised milk and sixty (60) cents/litre for raw milk. The revenue collected from the sale was:

	Quantity		*Price*	*Amount in rupees*
Pasteurised milk ...	72,977L	at	75 cs/L	54,732.75
Raw milk ...	6,964L	at	60 cs/L	4,178.40
				58,911.15

Faults on Pasteurisation Equipment

13.06 As previously mentioned, inevitable wear and tear faults occurred on the equipment. All the faults have been successfully coped with, but stress must be made of one fault which occurred on the Dairy Cold room on the 10th April, 1975 as it resulted in a modification of the equipment. The two fans cooling the radiator of the refrigerating Section were blocked. The fans were sent for repairs to the Telecommunications Department Workshop but were certified unserviceable. As no spare parts were available on the Mauritian market, apparatus had to be modified. That was done and since then, the cold room is working efficiently. An order has been placed for the spare parts and as soon as available will be put into service.

Quality of the Milk from Cows at the Livestock Breeding Station Curepipe

13.07 A committee was formed to look into the hygiene conditions of milk collection and the chemical and bacteriological qualities of the milk. The committee was composed of Messrs. C. Delaitre, J. Pablot, L. K. Mapoon, S. M. Sheik Hossen, S. Motee and P. Mardamootoo. The investigations started on the 18th June, 1975 and the committee met once a fortnight.

13.08 Five cows namely: M 1424, M 1442, M 1454, M 1458,, and M 1518 were placed under close observation and morning and evening samples of milk were separately analysed for coliforms total Bacteria, density, titrable acidity, fat, proteins, total solids and freezing point.

13.09 The results for one random taken day were as follows:

Evening Samples, 2nd September, 1975

Cow No.	*Coli ($X10^1$)*	*Total Bacteria ($X10^3$)*	*Density 15°C*	*Titrable Acidity (°Dornic)*	*Freezing Point °C*	*Fat %*	*Solids non fat %*	*Proteins %*
1424	1	28	30	18.0	–0.559	3.5	10.39	3.8
1442	1	6	30	17.0	–0.589	3.5	9.92	3.7
1454	1	6	31	19.0	—	5.5	9.09	4.15
1458	1	3	30	18.0	–0.559	3.5	9.62	3.8
1518	1	12	31	19.0	—	3.8	10.24	3.95

Morning Samples, 3rd September, 1975

1424	3	11	30	17.0	–0.549	3.1	9.86	3.8
1442	3	15	29	16.0	–0.579	3.3	9.19	3.7
1454	1	12	32	20.0	—	3.7	9.92	4.0
1458	6	32	31	18.0	–0.569	3.5	9.52	3.85
1518	1	24	31	18.0	–0.549	3.7	9.84	3,9

13.10 Comments on the results:

(i) there was no necessity of determining the freezing point for samples of titrable acidity greater than 18° Dornic as then the figures obtained would be meaningless.

(ii) The titrable acidity, freezing point and solids-not-fat of all the samples are high, clear indication of cows suffering from mastitis.

(iii) For nearly all the samples, the percentages proteins are higher than the percentages fat. A normal average milk should contain about 3.6% fat and 3.1% proteins. In cases of mastitis the amount of fat is reduced, but the total amount of proteins stays the same as the increase in albumin compensates for the decrease in Casein.

Preliminary Study of Mastitic Milk

13.11 Scientific officer, Mr. P. Mardamootoo, was transferred from the Agricultural Chemistry Division to the Dairy Chemistry Division on 23rd June, 1975. From October to December, 1975, Mr. Mardamootoo worked on the project "Study of Mastitic Milk i.e. the effect of mastitic on milk composition". Milk samples from the newly imported Friesian Cow were analysed and the results are discussed below.

Proteins and Fat

13.12 On the onset of Mastitis, the percentage of fat in the milk falls drastically. One cow, in particular, gave milk with a far content as low as 0.8%. After treatment of the udder, the percentage of fat increased, though not regularly. Seventy (70) days after treatment, the percentage was still below the normal level i.e. 3.6%.

13.13 The percentage proteins usually increased with the onset of Mastitis. That might be through the significant increase in the number of leuco-cytes in the milk. After treatment, the amount of proteins decreased and was normal again i.e. about 3.1%.

Titrable Acidity

13.14 In the absence of adulteration, titrable acidity is a sure test for mastitic milk. With the infection of the udder, the titrable acidity of the milk dropped from the normal 17°D to about 8°D. Seventy (70) days after treatment, the acidity was still well below the normal value. That might be due to a decrease in the casein content of the milk which in fact was also indicated by the low solids-not-fat values.

Density

13.15 The density of the mastitic milk was lower than that of normal milk.

Freezing Point

13.16 The Freezng Point of the milk was unaffected by the onset of mastitis. The reason for this might be that the increase in sodium chloride of the milk was counterbalanced by a decrease in the lactose content.

Breed Friesian Cows

Beef Type

13.17 The results of the milk samples from cows No. 429 and No. 928 are given below. The milk sample of cow No. 500, which had been tested and found free from mastitis was used as control.

No. of days after treatment	*Fat* %	*Proteins* %	*Titrable Acidity* °*D*	*Freezing Point* °*C*	*Density as 15°C*	*Solids–non–fat* %
Control ...	4.44	3.54	17	—0.545	29	8.55
			Cow No. 429			
19 ...	3.43	4.92	9.5	—0.557	26.0	6.93
32 ...	3.15	3.63	9.3	—0.534	28.5	8.14
40 ...	2.57	3.15	7.5	—0.548	22.0	4.83
50 ...	2.35	3.28	7.3	—0.549	26.0	6.31
60 ...	4.37	3.23	8.8	—0.552	26.0	6.27
71 ...	3.37	2.80	8.5	—0.545	26.5	6.22
			Cow No. 928			
2 ...	3.09	2.93	8.5	—0.543	19.0	7.19
9 ...	2.55	3.24	10.6	—0.553	26.5	7.29
16 ...	2.73	3.39	10.5	—0.549	26.8	7.97
20 ...	2.94	3.18	9.0	—0.538	23.0	7.80

Construction of New Building

13.18 The work for the drawing up of plans for the construction of a new building to house both the agricultural chemistry and the diary chemistry divisions was entrusted to a private architect. The building was to be two-storey high. A first plan was drawn up in October, 1973. Since then, there have been regular monthly meetings with both the agricultural chemistry and diary chemistry Divisional Scientific Officer at the Architect's office in Port Louis. New plans were drawn up in July 1974 and meetings continued up to May 1975. In December 1975, the tender for the construction was allocated to a private contractor and work on the buildings is to start in January 1976.

Improvements

13.19 *(a)* An air conditioner was installed on the 14th March, 1975 to maintain the temperature in the milk laboratory at 15°C.

(b) Four new instruments have been received by the Division and put into use:

Instrument

Cryotest for automatic determination of milk freezing point,

Hot Air Sterilising Oven,

Autoclave (horizontal type, electrically heated),

Electronic calculating machine

Visits

13.20 University students of the 3rd year degree course, Sanitary Sciences I and II visited the Dairy Laboratory and the Pasteurisation Centrre on different days. They were given demonstrations on and explanations of all the instruments by the members of the staff.

Staff Movements

13.21 Technical officer (Scientific) Mr. B. Oomah was transferred back to the Agricultural Chemistry Division on 22nd February, 1975, Scientific officer, Mr. P. Mardamootoo assumed duty at the Dairy Division on 22nd June 1975. The Technical Officer Mr. P. Rangasamy went on overseas leave on 14th November, 1975.

XIV. Entomology Division

Head of Division: M. J. L. Monty, Divisional Scientific Officer

Introduction

14.01 As in the past years, the work of the Division was concentrated on studies for the control of stable flies and on sericulture. These two projects have been given priority over other entomological problems, because of their important influences on the economic development of the island.

14.02 It is expected that the research on stable flies will be completed by the end of 1977, when a conclusion on the feasibility of eradication should be made.

14.03 The trials on silk production have now been completed. The next phase is the introduction of sericulture into the farming community. The division will be responsible for the initial launching of pilot projects. If they are successful, a separate Division of Sericulture should be created to allow the Division to resume work on pest problems such as fruitflies and tobacco bud-worms.

Staff: News, Appointments and Visitors

14.04 The Scientific Officer, Mr. A. Joomye, resumed duty in October after receiving his M.Sc. degree at the Indian Agricultural Research Institute. He has been assigned responsibility for sericulture and to assist in ecology of stable flies.

14.05 The Scientific Officer, Mr. M. Ramsamy, was awarded a M.Sc. degree from the University of London for a thesis on the "Use of the Sterile Male Technique for the eradication of stable fiies," a research programme entirely carried out within the Division.

14.06 Miss I. Balluck, B.Sc. (Hons.), M.Sc. (Zoology) was appointed Scientific Officer as from 13th March, she has been assigned to work on the ecology and biological control of stable flies.

14.07 Miss H. Peeroo and Miss D. Chung Fat, both diploma holders of the University of Mauritius were appointed to positions of Technical Officer, with effect from 28th April.

14.08 The Divisional Scientific Officer, Mr. J. Monty, attended the Xth Commonwealth Entomological Conference in London in July. Whilst in England, he also visited the Tropical Products Institute, the Centre for Overseas Pest Research and in France he visited the headquarters of the International Sericultural Commission at Ales.

14.09 The Divisional Scientific Officer visited the stable fly projects undertaken by the United States Department of Agriculture in Florida and on St. Croix Island (Caribbean). The travel was financed by the U.N.D.P./ F.A.O. under the stable fly Research Project.

14.10 On his return from the U.S.A., the Divisional Scientific Officer visited the F.A.O. in Rome for discussions on the stable fly project and subsequently attended the International Sericultural Congress held at Tlemcen, Algeria in September.

Foreign Technical Assistance

14.11 Dr. K. R. P. Singh, of the Indian Council of Medical Research was appointed by F.A.O. as expert entomologist for the stable fly research project. Dr. Singh was a member of the scientific team of the WHO project for vector control by genetic principles in New Delhi. Dr. Singh assumed duty on November 1, and his assignment consists in studying the feasibility of eradicating stable flies by the sterile insect technique.

14.12 Mr. N. Ganesh, Sericulturist with the Central Silk Board in Mysore, India, was appointed by the Indian Government to give assistance in the development of sericulture in Mauritius. Mr. Ganesh assumed duty in October.

14.13 Following requests made by the Mauritian Government, the British Ministry of Overseas Development delegated Miss E. Luard and Mr. J. Grose of the Centre for Overseas Pest Research to visit Mauritius in connection with the control of the Natal fruit-fly and of stable flies, respectively.

14.14 Dr. G. B. Pickering, Chemist at the Tropical Products Institute, visited Mauritius to advise on the detection and control of pesticide residues in food crops.

Activities of the Division

Stable Fly Research

14.15 Modern and spacious laboratory facilities were made available in August. Large rearing rooms for adult and larval flies were fully air-conditioned and the facilities will be suitable for the initial mass rearing of stable flies at a rate of 200,000 pupae per day which will be required for field testing of the sterile insect technique and for the propagation of parasites.

LABORATORY RESEARCH (BY SCIENTIFIC OFFICER MR. M. RAMSAMY)

14.16 The following aspects of the *Stomoxys* Project were investigated:

1. General biology of *S. nigra;*
2. Mating habits of the insect;
3. The competitiveness of the radio-treated laboratory reared males;
4. Large scale rearing;

A. GENERAL LABORATORY BIOLOGY

14.17 (1) Adults were tested in incubators at the following temperatures: 15, 20, 25, 30 and 35°C and it was found that only at 25°C and in the controls (28±1.5°C) females produced eggs. The optimum RH for rearing flies lies between 60-80 per cent RH.

14.18 (2) The viable range for eggs is from 15 to 35°C when the atmosphere is saturated with water vapour. 80 per cent of eggs succumb during the first 10 days when they are kept at 10°C.

14.19 It was noted last year that shredded Elephant grass *(Pennisetum purpureum)* is a suitable larval breeding medium. Further tests on the larval diet have this year shown that if wheat bran is added to elephant grass in the ratio of 1:5, pupal output may be improved by about 5 per cent. More bran in the diet does not cause any increase in output of pupae.

B. MATING HABITS

14.20 Males and females are both incapable of mating until they are at least 2 days old. On average, both sexes become sexually mature on the 6th day from the time of emergence. Freshly emerged males have fully developed testes containing spermatozoa but they are not however, sexually aggressive; they seem to require several blood meals before they can inseminate females. The ovaries of females which are freshly emerged are very small. Females require at least 4 blood meals: one meal per day for four consecutive days in order to be able to produce eggs.

14.21 Males are polygamous. One mature male (6-day old) can inseminate a maximum of 7 females (also 6 day old) in 48 hours: the average number of females a male can inseminate for such a contact period is 5.5.

14.22 Females are monogamous. One insemination is enough to fertilize all the eggs which a female can produce during her lifespan. Already inseminated females display repulsiveness to further matings. Uninsemated females produce eggs but these do not hatch.

C. Mating Competitivesness of Males Treated with 3000 R of Gamma Rays

Males treated with 3000 Roentgens of gamma rays (TM) when tested in the laboratory against untreated males (UM) appear to be fully competitive. When caged with untreated females (UF) and UM, in the following two ratios: 2TM:1UF: 1 UM and 4TM:1UF: 1 UM, the radiation treated males were slightly more competitive than the untreated males.

14.24 The laboratory-reared treated males, however, when tested against wild males in field cages showed reduced competitiveness.

D. Large Scale Rearing

14.25 Two factors were found to influence yield and weight of pupae. These are: the amount of water in the larval medium and rearing density.

14.26 Additional water is an essential in the larval medium. If no water is added to the grass/bran medium, scarcely any pupae are produced. For a constant amount of eggs (e.g. 1 ml.) and for a constant weight of medium (1 kg.) pupation shows a peak when the amount of water reached the level of 2.0 ml./g. of medium. Pupal weight is maximal when the amount of additional water is at the level of 2.5 ml./g. of the grass/bran mixture. The medium with 2 ml./g. of mixture produced 7.3 times more pupae than that at 2.5 ml. of water/g. of mixture and this medium is as a result used for large scale rearing of larvae.

14.27 Pupation and pupal weight also varies with the rearing density. Maximum pupation and maximum pupal weight are obtained at the lowest rearing density. To rear larvae at very low densities is uneconomical as far as space, amount of medium, containers and labour are concerned. Considerations are therefore given to economy as well as to grade of pupae. If eggs are seeded at the rate of 1 ml. per kg. of medium i.e. per larval tray, the number of pupae produced per tray is about 1500.

14.28 One ml. contains 10,000 eggs and produces on average 1,500 pupae. Adult emergence is roughly 80 per cent. Based on these figures, the efficiency of the rearing is 12 per cent.

14.29 Such an efficiency is too low for mass production. It should, however, be noted that larval rearing was carried out in a poorly conditioned room. Priority should therefore be given for the search on better larval rearing conditions. In small scale tests under optimum conditions, using first-instar larvae instead of eggs, efficiency greater than 50 per cent have been achieved. Scope therefore, exists for higher efficiency in the large scale production.

14.30 Pupae, still collected by floatation, are reared at 28 to 30°C in a water-saturated atmosphere. When flies are ready to emerge, they are divided volumetrically into lots of about 2,000 and kept in adult cages.

14.31 The adults start to lay as from the 4th or the 5th day since emergence time. Peak egg production is on the 7th to 8th day. Eggs are collected daily from the 5th up to the 15th day, after which the cages are removed from the adult room. The average amount of eggs harvested daily per cage is roughly $\frac{1}{4}$ ml.

Ecology

14.32 Shortage of staff and delays in the operation of the U.N.D.P./F.A.O. stable fly project considerably handicaped the research in the field. The stable fly *stomoxys nigra* was very severe due to the wet conditions which prevailed throughout most of the year. However, the fly's density decreased below damaging levels between the months of April to September, a phenomenon which occures regularly every year.

14.33 The factors which contribute to the annual and seasonal decrease in the population of *S. nigra* have for a long time been thought to be associated mainly with weather conditions. Following the discovery that the fly breeds almost exclusively in the dead straws rotting in sugar cane fields, a theory has emerged that the populations of the flies could be regulated also by the availability of suitable breeding grounds. It was postulated that, because the flies are extremely positively phototropic, they would be repelled by the relative darkness prevailing inside sugar-cane fields from the month of April till the start of the harvest season in July. The flies would thus find relatively few suitable breeding places to lay their eggs.

14.34 This theory was tested in sugar-cane field at Ebene estate at Reduit which was harvested in March 1975 for the purpose of obtaining setts for planting new fields.

14.35 The field of about 2 acres in area, was subdivided into a number of small plots where stable fly pupae were searched amongst the decaying straws piled between the lines of sugar-cane. The surveys were made weekly starting in May when the canes were about 3 feet tall and had not covered the interlines, and progressed till the end of the year. The number of pupae collected weekly increased progressively to reach a maximum number representing a weekly extrapolation of 8,437 pupae per acre of sugar-cane in the month of July. The size of the collections started to decrease in late July, coinciding with the time when the sugar-cane has grown tall enough to overlap over the straws. After the 11th September, no pupae could be found in the field where the canes had completely closed over the thrash.

14.36 This preliminary observation tends to establish that *S. nigra* can breed throughout the year, provided it can gain access to open breeding sites in sugar cane fields.

14.37 It demonstrates clearly that the flies do not breed in fields where the canes are tall, but it remains to be shown whether the flies avoid such fields for oviposition or whether the deposited eggs fail to develop. More elaborate experiments will be set up to pursue this important aspect of the fly's behaviour.

14.38 It is noteworthy that the observed pupal density of 8,437 per week per acre of ratoon sugar-cane gives an explanation for the high populations of *S. nigra* existing between the months of October to April. Laboratory observations have revealed that at least 50 per cent of the collected pupae give rise to flies. A crude estimation of the emergence of stable flies from 5,000 acres of harvested sugar cane in the humid areas would be in the region of 20 million flies per week during the wet summer months. These estimates fit well with absolute density measures made in previous years by counting flies on cattle and deer.

Biological Group of S. Nigra

14.39 The Encytid parasite *Tachinaephagus* sp. introduced from Uganda in 1972 was reared in the laboratory on a culture of *S. calcitrans* and released in many parts of the island. 44 releases were made throughout the humid regions of the island, totalling 1,216,000 insects.

14.40 *Tachinaephagus* sp. is a new species in the process of being described at the Commonwealth Institute of Entomology. It is a larval parasite of *S. nigra* and seems to have good dispersal abilities as it has been recovered in many parts of the island. The parasite deposits eggs in the mature larva but these develop after the fly has pupated. The parasite is very small, about 3 mm in length and up to 12 parasites emerge from a single fly puparium.

14.41 The Diapriid parasite *Trichopria* sp. occurring naturally in Uganda and Mauritius have been examined by specialists at the Commonwealth Institute of Entomology and found to be the same species. The parasite exists in Mauritius at low densities and is one of the few enemies of *S. nigra* recorded locally. It is also a larval parasite developing in the fly's puparium and since it is relatively easy to rear, it has been multiplied and released throughout the island during the year. 473,500 parasites of the Mauritian strain and 129,000 of the Uganda strain were released on 78 occasions in various localities of the humid regions.

Recovery of Parasites

14.42 The pupae of *S. nigra* collected during the operation described at paragraphs 14.32 to 14.38, were kept in the laboratory and the percentage parasitism was recorded. The mean parasitism recorded was 27.0 per cent with figures ranging from 0 to 100 per cent for 15 observations. The parasite species recovered were *Trichopria* sp. and *Tachinaephagus* sp,. with occasional recovery of the Pteromalid parasites *Spalangia* sp.

14.43 Surveys were also made in other localities for the detection of parasites. Results are summarized in table 1.

TABLE 1

PARASITISM IN PUPAE OF S. NIGRA IN SUGAR CANE FIELDS

Date of collection	*Local ty*	*No. of pupae collected*	*Tachinae-phagus sp.*	*% Parasitism*	
				T-ichopria sp.	*Spalangia sp.*
25. 2.75	Flacq	59	—	27.7	29.8
20. 3.75	Henrietta	9	—	55.6	22.2
9. 4.75	Curepipe	16	—	18.8	12.5
29. 4.75	Flacq	36	—	30.6	44.4
5.12.75	Valetta	104	—	50.0	37.5

14.44 The results achieved so far are encouraging although the effects on the fly's populations are not yet apparent. The new parasite species *Tachinae-phagus* sp. appear to be well established; the Diapriid *Trichopria* sp. is increasing in abundance in localities where it has been released. Because of the large amounts of breeding grounds available in the sugar cane fields pupae parasitism in *S. nigra* should reach figures above 90 per cent before any significant effect can be observed on livestock.

14.45 *Sericulture*

MORICULTURE

14.46 The mulberry plantations continued to supply high yields of leaves equivalent to a minimum of 600 kg. of fresh cocoons per acre per year. New plantations were established at Nouvelle Decouverte over about 2.5 acres. (The severe cyclone which hit the country in February defoliated the plantations, causing a temporary stoppage in cocoon production. The plants were pruned after the cyclone and the leaf production was again abondant 2 months later. The cyclone did not cause the death of any plant).

14.47 The Indian Expert introduced the following varieties of mulberry from India:

(a) S.54 and S.41 have very short internodes which result in high leaf yields of 20,000 kg. per acre. (The average yield of Mauritian varieties is about 15,000 kg. per acre).

(b) 0P-hybrid, of about equivalent leaf yield as above, has especially good leaf storage qualities, a desired characteristic for lowering the cost of labour in sericulture.

14.48 These were planted in quarantine prior to being established in the field.

14.49 The Vietnamese varieties Ai-Huan and Duy-Viet introduced in 1974 also resisted well to the cyclone. They have been submitted to propagation for trials against the local varieties.

Silk-Worm Seed Production

14.50 Considerable attention continued to be given to the production of sound, disease-free seeds for the production of cocoons. The pure races Kalimpong A and Nan-Nung 6D introduced in 1972, were raised separately and all the mother moths were examined microscopically. No signs of the disease pebrine were noticed.

14.51 The Cyclone *Gervaise* interrupted the power supply for about 10 days. Fortunately, part of the seed stock in refrigeration could be saved by transferring the refrigerator to a nearby medical clinic where electricity was available. Cyclone being regular events in the region, silk-worm seed storage must be protected by autonomous power generators.

14.52 Three new silk-worm strains were introduced in October by the Indian Sericulturist. They are improved strains of Kalimpong A and Nan Nung 6D and a new race NB4D2 evolved in Mysore. These strains are intended to reinforce the original strains which may have degenerated to some extent.

Cocoon Production

14.53 The production of cocoons from the hybrids between the silk-worm races Kalimpong A and Nan Nung 6D continued to be very satisfactory. Silk-worm rearings were handicaped by insufficient space on the rearing stations, so that the mulberry plantations could not be used maximally. Cocoons were produced on 6 outstations in 4 districts from hybrid silkworm seeds produced at the Central Laboratory at Reduit. Table 2 summarizes the production of cocoons:

TABLE 2

Production of Cocoons for 1975

Station	*No. of layings reared*	*Wt. of cocoons harvested (kg.)*	*Yield of cocoons kg. per 100 layings*	*Remark No. layings destroyed by cyclone*
Reduit	118	53.600	45.4	100
Barkly	33	16.226	50.0	20
Pamplemousses ...	28	10.532	37.0	—
Rivière des Anguilles ...	21	9.350	44.5	15
Plaisance	45	18.622	40.1	20
Curepipe	54	24.115	44.6	15
TOTAL ...	299	132.445	44.295	70

14.54 The average yield of 44.295 kg. of cocoons for 100 layings is considered low in comparison with the figures obtained in 1974 (51.1 kg.). The reduction in yield is mostly due to the effects of the cyclone which has disrupted rearings during the best period of mulberry growth.

Extension Work

14.55 Mulberry cuttings were supplied to the Bois Chéri Tea Estate for trials with the object of introducing sericulture into the private sector.

Psyllid Citrus Vectors of Greening Disease

14.56 Two vectors of *Citrus* greening disease exist in Mauritius. They are the Psyllids *Trioza erythreae* and *Diaphorina citri*. Surveys were conducted in three *Citrus* orchards to start a preliminary ecological study of the vectors and to determine whether any parasites of the pests were present. Yellow sticky boards were hung on *Citrus* trees and were examined weekly for the presence of Psyllids. Eggs and larvae of *Trioza erythreae* were collected and kept in observation for presence of parasites. The surveys were conducted between May and December in orchards at Reduit (medium elevation) Curepipe (high elevation) and Plaisance (low elevation). *T. erythreae* was abundant on the traps at all three stations reaching peak densities in October and November. They were much more abundant at Curepipe than at the other stations.

14.57. *D. citri* was practically not collected at Curepipe and Reduit. At Plaisance, the Psyllid was present on the traps throughout the survey period, but in very small numbers.

14.58 Assuming that the two Psyllids were equally attracted to the yellow boards, it can be concluded that *T. erythreae* is a more important and more widely distributed vector than *D. citri*. Although gall formation resulting from larval feeding by *T. erythreae* is restricted to winter months, the adults visit the trees all year round. It is therefore advisable to apply a systemic insecticide regularly in order to minimize the transmission of greening disease.

14.59 *Fruit-flies.*

Biological Control

14.60 A few consignments of the larval parasite *Trybliographa daci* were introduced from the Pakistan station of the Commonwealth Institute of Biological Control. They were released in cucumber fields for the control of the melon fly *Dacus cucurbitae*.

14.61 The Natal fruit-fly *Pterandrus rosa* was not as severe as in the previous years. In an insecticide trial in a mango orchard, untreated trees yielded as many sound fruits as treated ones. Also, very few flies were caught on traps placed in orchards. It is postulated that the severe cyclone of February may have reduced the fly's populations by the destruction of all fruits, both wild and cultivated.

14.62 A new species of fruit-fly was recorded from Plaisance Experimental Station. It was identified by the Commonwealth Institue of Entomology as *Dacus punctatifrons* Karsch. The insect is widespread in tropical Africa and is a pest of cucurbits. Its importance in Mauritius is not yet known.

The Coconut Palm Rhinoceros Beetle

14.63 The Coconut Rhinoceros beetle, *Oryctes rhinoceros* continued to be controlled by the virus *Rhabdionvirus oryctes*. Whereas the coconut palms in northern areas were generally in excellent shape, those in the south suffere dsporadic damage by the beetles. The February cyclone had created more breeding sites for the beetles which had been more abundant at the end of the year. Surveys in farmyard manure revealed a density of 10.6 larvae per heap, an increase of 6.9 over last year's records.

14.64 The situation is being carefully surveyed and a stock of viral material is being maintained for reinforcing the conrtol when necessary. The capture of adults for infection in the laboratory and release in the field, a method now in operation in Pacific islands, may be tried next year.

14.65 The Banana leaf-roller *Erionata thrax* was extremely rare, due to the complete destruction of banana leaves following cyclone "Gervaise". No materials could be collected for an estimation of the biological control established in the previous years.

XV. Crop Experiment Stations Division

Head of Division: S. Y. E. Doomun, Agricultural Superintendent

Introduction

15.01 The activities of the Division consisted mainly of the production of vegetable seeds, the propagation of fruit trees and ornamentals and the provision of facilities for carrying out experiments on vegetable and orchard crops by Scientific Officers of the various divisions. It was also responsible for the maintenance and upkeep of the Royal Botanic Gardens at Pamplemousses, the Government House, Le Reduit, Government House, Port Louis, Headquarters House, Vacoas, Quatre Bornes D.C.O., and the Trunk Road. The stations also provided, whenever possible, fruits and vegetables to charitable institutions.

15.02 Cyclone *Gervaise,* which occurred on the 6th of February, 1975, did not seriously affect the seed production programme. On the other hand, orchards suffered considerably. The coconut orchard at Plaisance Experiment Station was almost completely wiped out. The lichi orchards at Plaisance Experiment Station, Barkly and Richelieu Experiment Stations were badly torn. The Citrus orchard at Curepipe Experiment Station was also badly damaged. The Royal Botanical Gardens suffered most. Large trees were blown down and the whole place looked so hopelessly desolate and battered. By the end of the year, however, much work had been done towards restoring the Gardens to their original state. Malayan dwarfs seed nuts were ordered from Malaysia. The orchards at Plaisance were renewed and seedlings provided to the public.

15.03 The demand for vegetable seeds was great after the cyclone. All stocks of seed at Barkly Experiment Station were depleted. Carrot seeds, variety de la Halle, were ordered from France to satisfy growers' requirements. The cultivation of beans, peas, groundnuts and creepers was itensified.

15.04 The climatic conditions during the rest of the year were fair except for a period of drought in November and December affecting Richelieu Experiment Station most.

CUREPIPE EXPERIMENT STATION

'Acting' Senior Technical Officer—R. Purran

Development

15.05 Nil.

Weather Conditions

15.06 There were normal except in February during passage of cyclone *Gervaise*.

Cropping Programme

15.07 The following crops were planted during the year:

Crops	*Field No.*	*Acreage*	*Date Planted*	*Date Harvested*
Pumpkin	14 & 17	2.10 A	3–5.9.74	4.1.75–3.2.75
Calabash	8	2.00 A	13.9–18.9	25.3.75
Citrouille	13	0.03 A	18.9–21.9.74 (transplanted)	17.1.75
Pipengaille	3 & 9	6.40 A	20.10–25.10.74	4.1.75–16.2.75
Pumpkin	12 & 13	4.15 A	3.2–5.2.75 (transplanted)	26.5.75
Squash Golden	7	0.07 A	4.4.75 (transplanted)	5.6.75
Squash Golden	7	0.08 A	21.4.75 (transplanted)	14.7.75
Brede de Chine Frisée ...	7	0.07 A	14.5.75 (sown)	21.10.75
Brede de Chine Frisée ...	7	0.11 A	3.6.75 (sown)	21.10.75
Brede de Chine Frisée ...	7	0.05 A	28.6.75 (sown)	—
Cucumber White	9	0.90 A	13.8.75 (transplanted)	sold as plants were affected by "rosetting"
Pumpkin	8	2.30 A	5.9.75 (transplanted)	6.1.76
Pumpkin	11	1.89 A	5.9.75	—
Pumpkin	12	1.60 A	5.9.75	—
Pumpkin	13	2.55 A	5.9.75	—
Pumpkin	13 A	0.40 A	5.9.75	—
Pipengaille	6	1.88 A	16.9.75 (transplanted)	20.1.76
Calabash	3	0.90 A	18.9.75 (transplanted)	2.3.76
Cucumber (White) ...	9	0.05 A	17.12.75 (transplanted)	24.2.76

15.08 Fruits and seeds of the folowing were sent to Barkly Experiment Station in 1975:

Pumpkin	...	359	units
Squash Golden	...	205	units
Calabash Natal	...	1,400	units
Citrouille	...	49	units
Pipengaille	...	1,218	units
Brède de Chine Frisée	...	57.5	kg
Grenadine local fruit	...	20	units

15.09 In September, Pumpkin, Calabash and Pipengaille were planted for seed production.

Vegetables for sale to the public

15.10 Since August, crops were grown for demonstration and sale to the public; Radish, Rave Blanche, Brède Kotachee, Brède Martin, Peas Local and Chinese Peas were planted.

Fodder

15.11 La Brasserie fodder section was detached from Curepipe Experiment Station in April.

Sericulture

15.12 The project started in March 1973 is still going on. Larvae were sent from Reduit. After cocoon formation, they were sent back to Reduit. During the year, 14 batches weighing 55 kg 075 were sent to Reduit.

Livestock

15.13 The following remained on the station:

187 sykes brown layers out of a batch of 200 which arrived on the station in October 1974, 58 Ducks (Pekinese and Muscovite), two black Swans, one Peahen, and 17 Geese.

Experiments

15.14 The Station provides facilities for experiments by the specialist Divisions. The following were carried out.

I. By Scientific Officers of the Agricultural Division

1. Fodder Setaria: Soil Amendment i.e. experiment on the effectiveness of Calcium Silicate Slag and Basalt dust as soil amendment. The experiment started on 11th and 12th December, 1972 and ended in December, 1975.

2. Fodder Variety Trial: To compare the suitability of eight grass species as a source of fodder. The varieties planted are:

(i) Pennisetum purpureum
(ii) Cenchrus ciliarus
(iii) Chloris gayana
(iv) Panicum maximum
(v) Brachiaria brizantha
(vi) Brachiaria ruzizienzis
(vii) Tripsacum laxum
(viii) Setaria sphacelata

15.15 The experiment was set up on 9th January, 1974 and is still going on. Both experiments were set up by the Agricultural Division.

II. By Scientific Officers, Plant Pathology Division

The following experiments were carried out during 1975:

1. Ginger: Fungicide trial

2. Tomato: Variety trial—soil block transplanted on 17th July, 1975 (13 varieties).

By Scientific Officers

1. Spinach: Variety trial Winter Giant and Viroflay (May)

2. Leeks: Variety trial Giant Carentan and Local (May)

3. Leeks: Giant Carenthan (September)

4. Tomato: Variety trial (three varieties) on 30th August, 1975

5. Spinach: Variety trial Winter Giant and Viroflay (September)

6. Squash: Variety trial (Golden (Local), Bennings Ting Scallop and White Bush Scallop)

7. Okra TAE 314: Soil block transplanted on 12th November, 1975

8. Pigeon Pea: Variety trial set up on 13th November, 1975

9. Cow Pea: Variety trial set up on 20th November, 1975

10. Cucumber: Variety trial (Palomar, Poinsett, Local) soil block transplanted on 17th December, 1975.

Disposal of Produce

15.16 Sale of produce for 1975 amounted to Rs 21,799.96.

Given free of charge to charitable Institutions:

Cucumber, Sweet Potato, Spinach, Watercress, Leeks, Shallot, Brède de Chine, Turnip, etc.

PLAISANCE EXPERIMENT STATION

ACTING SENIOR TECHNICAL OFFICER—R. PURRAN

Development

15.17 The station is fully developed.

Weather Conditions

15.18 In February cyclone *Gervaise* occurred while during the end of the year drought conditions prevailed.

Cropping Programme

15.19 After cyclone *Gervaise,* fields No. 2 (formerly under litchi) and No. 3 (formerly under coconut) were planted with coconut Malayan Dwarf seedlings (110 yellow and 120 red) respectively on 27th November and 10th December.

15.20 The following crops were planted:

Crops	*Field No.*	*Acreage*	*Date Planted*	*Date Harvested*
Groundnut (Cabri) ...	11	0.75 A	6. 1.75	8. 5.75
Brinjal Rosita	5	0.05 A	19.11.74 transplanted	25. 1.75
Groundnuts (Cabri) ...	10	0.70 A	14.12.74	17. 4.75
Groundnuts (Cabri) ...	9	0.29 A	19.12.74	18. 4.75
Groundnuts (Cabri) ...	11	0.40 A	21.12.74	18. 4.75
Chillies (Dunputh) ...	5	0.10 A	1. 4.75 transplanted	Uprooted on 2. 6.75 (affected by virus)
Bokla	10	0.35 A	15. 5.— 21. 5.75	5. 9.— 25. 9.75
Peas Local	10	0.65 A	23. 5.75	2. 5.75 15. 9—
Peas Local	9	0.45 A	27. 5.75	10.9.75
Peas Local	1	0.40 A	30.5.75 & 13.6	8.9.75 & 15.9.75
Bokla	3	0.40 A	2.6.75 & 5.6.75	5.9.75–29.9.75
Peas Local	11	0.64 A	5.6. & 21.6.	10.9.–3.10.75
Peas Local	6	0.25 A	19.6.75	25.9.–3.10.75
Watermelon Sugar Baby ...	3	0.56 A	26.7.75	7.11.75
Bringelle Rosita	11	0.08 A	21.8.75 transplanted	6.11, 28.11.75 discarded
Groundnut Cabri	10	0.65 A	5.11.75	9.3.76–17.3.76
Groundnut Cabri	9	0.45 A	6.11.75	17.3.76, 18.3.
Manioc local	5	0.10 A	6.11.75	not yet harvested (for planting material)
Groundnut (Cabri)	5	0.42 A	7.11.75	8.3. & 9.3.76
Groundnut Cabri	1	0.20 A	10.11.75	20.3.76
Groundnut Cabri	10B	0.55 A	17.11.75	30.3.76
Groundnut Cabri	6	0.50 A	20.11.76	30.3. & 1.4.76

Experiments

15.21 Facilities to specialist officers were provided in connection with the following experiments carried out during the year:

I. By Scientific Officers of the Agricultural Division

1. Okra: Observation trial and seed production
2. Peas: Variety trial (Ajax, Greenfeast, Chinese)
3. Garlic: Spacing trial
4. Garlic: Fertilizer trial
5. Garlic: Feng Shan Sel No. 2. Multiplication and observation trials
6. Garlic: Multiplication and observation trial
7. Garlic: Multiplication and observation trial
8. Peas: Sed production—varieties Licoln, Orward and Douce Provence

II. By Scientific Officers of the Plant Pathology Division

1. Peas local—Fungicide trial
2. Cucumber—Variety trial; Poinsett, local, Palomar
3. Pumpkin—variety trial: Small Sugar, local, Butter Large Strain
4. Okra—TAE 1B and TAE 26—Observation and seed production
5. Pumpkin—Variety trial—Local, Butter Large Strain and Small Sugar

Disposal of Produce

15.22 The sale of produce amounted to Rs 1,848.86 during 1975. The sum was remitted at Mahebourg Post Office.

15.23 The following were sent to Barkly Experiment Station:

Bringelle Rosita	415	units
Pawpaw Wilcox	17	units
Groundnuts Cabri	2,769	kg
Peas Local	661.5	kg
Bokla	57	kg

1,300 kg Ginger were sent to Curepipe Experiment Station to be stored as planting material.

CENTRAL EXPERIMENT STATION

SENIOR TECHNICAL OFFICER—C. GOUGES

Development

15.24 At the request of the Agricultural Division a shed (30 ft×40 ft) of galvanised pipe and wire netting has been erected for experiments on Anthurium.

Weather Conditions

15.25 The weather was fair except in February when cyclone *Gervaise* visited the Island.

Cropping Programme

15.26 *Orchards*

Rehabilitation after the cyclone and routine maintenance work was carried out. In the citrus orchard three grafts of Pamplemousses variety St. Julien have been planted.

In the peach orchard 10 grafted plants consisting of the following varieties:

Two Babcock, one Angel, one Florida Crowford, two kind Edward, one Halls Yellow and three of unknown varieties have been planted to replace uprooted trees.

All coffee plants were pruned to six feet and watershoots removed.

A poor crop of avocado and citrus was obtained; about 4,700 avocado fruits were sold to the public and the citrus fruits were sent to the Marketing Board.

The citrus fruits consisted of the following:

Oranges	...	...	2,168
Mandarins	...	...	7,028
Grapefruits	...	...	995
Pamplemousses	...	...	64
Tangeloes	...	...	449
Vangasailles	...	...	7,200

FOODCROPS

Manioc

A collection of 20 varieties of cassava are maintained to provide planting material to the farming community and for observations on their relative performance.

In July the plantation extending over an area of 0.81 arpent was harvested. In September a new plantation of the 20 varieties namely: Butter stick, Paloma, Yeyein, Rodnay, De table, Icery, Nestor, Negrita 15, Negrita 17, Bitter, Blanchite, Desveaux, De table St. Martin, Australia, Manioc 29, Manioc blanc, Jaune Rempart, Beureum, Singapore and Jaune Trianon has been established on 0.68 arpent.

Sweet Potato

A small collection of varieties has been set up in the interrow of young citrus plants in Block II field 4. The following varieties were planted: (1) Red (2) Violet (3) Bourbon (4) Joes, (5) Mirbelle (6) Gandia (7) Pelican processor (8) S.M. 4 (9) Raisin college.

The following crops were planted for seed production:

Crops	*Date Planted*	*Area*
Brede de chine (Hamchoy) ...	6/3	55 m²
Brede de chine (Hamchoy) ...	18/4	39 „
Cauliflower var. Gaukhool ...	19/4	27 „
Beetroot var. local	12/5	108 „
Beetroot var. local (after selection) ...	2/7	258 „
Rave blanche	20/5–21/6	1344 „
Cucumber white	28/6	810 „
Bean var. Victory	8/7	1800 „
Bean var. Victory	30/7	297 „
Cucumber white	25/9	162 „
Groundnut var. local cabri ...	15/10–21/10	3015 „
Pipengailles var. local	25/11	116 „

Fodder

The grass collection was maintained but as there was no demand for fodder, fields under fodder were ploughed and used for vegetable seed production.

Experiments

15.27 The following experiments were carried out on the station by Scientific Officers of the undermentioned Divisions during the year:

A. Agricultural Division

(i) Strawberry—*(a)* Comparison of yield of six varieties
(b) Comparison of three types of mulching

(ii) Garlic—variety Feng Shan Sel No. 1—Determination of optimum time of planting.

(iii) Spinach—Observation of two new varieties, namely Viroflay giant and Winter Giant.

(iv) Soyabean—Variety trial.

(v) Pumpkin—Observation of two new varieties, namely Butter Large Strain and Small Sugar and comparison local.

(vi) Cucumber—Observation of two new varieties, namely Poinsett and Palomar and comparison with local variety.

(vii) Sweet pepper—Observation trial of four varieties: Kepstone Resistant Giant, California Wonder, Dunputh and Chinese Giant.

B. Plant Pathology Division

(i) Potato—Bacterial wilt rotation experiment. Two plantations were caried out in May and November.

(ii) Peas—Fungicide trial for control of Ascochyta.

(iii) Bean variety local red—Fungicide trial.

(iv) Ginger—Chemical control of Blight.

Disposal of Produce

15.28 The following were sent to Barkly Experiment Station for seed production:

Groundnut variety local cabri ...	1,570 kg
Groundnut variety Beit Dagan ...	141 kg
Groundnut variety Florigiant ...	66 kg
Pea variety Merveille de Kelvedon ...	2 kg 100 uncleaned seeds
Rave Blanche	543 kg 600 uncleaned seeds
Brede de chine 'Salee'	1 kg 500 uncleaned seeds
Beetroot local	27 kg 800 uncleaned seeds
Cucumber white	280 units
Garlic variety Fen Shan Sel No. 1 ...	59 kg 875
Peas variety local	77 kg

The sale of produce during the year amounted to Rs 1,460.25.

BARKLY EXPERIMENT STATION

Senior Technical Officer—Mrs. A. C. Chan Hing Chong

Development

15.29 The demand for grafted plants, seedlings having considerably increased; the nursery section has been enlarged and is being fenced with chainlink.

Weather Conditions

15.30 The weather conditions were normal except in February when cyclone *Gervaise* occurred.

Cropping Programme

15.31 *(a)* Plant Propagation

25,275 plants of various species of fruit trees and 9,822 various ornamental plants were produced and issued to sales section and to other stations.

(b) The following crops were planted:

Crops	*Acreage*		*Period*
Patole	0.05	A	from 28.9.74 to 15.1.75
Bean local red	1.03	A	7.10.74 to 3.1.75
Lalo	0.025	A	11.10.74 to 12.2.75
Pipengaille	0.04	A	18.10.74 to 14.3.75
Carrot de la halle	0.045	A	3 times 3.3.75 to 18.8.75
Leeks	0.025	A	15.3.75 to 28.6.75
Radish	0.03	A	17.3.75 to 16.4.75
Chillies var. Chinese Giant ...	0.225	A	25.3.75 to 27.6.75
Rave Blanche	0,75	A	4 times 2.4.75—19.6.75
Brede de chine var. Baton Blanc ...	0.575	A	8.4.75. to 1.8.75
Radish stecklings	0.135	A	17.4.75 to 27.8.75
Salsifis	0.03	A	19.4.75 to 13.11.75
Peas local	7.99	A	8 fields 23.4.75 to 7.11.75
Leeks	0.0125	A	26.4.75 to 26.2.75
Squash var. golden custard ...	0.4	A	8.5.75 to 23.7.75
Cauliflower	0.7	A	9.5.75 to 23.10.75
Carrot de la halle stecklings ...	0.004	A	27.5.75 to 10.12.75
Peas chinese...	1.2	A	30.5.75 to 17.9.75
Brede martin	0.5	A	3.6.75 to 16.10.75
Lettuce mignonette	0.045	A	5.6.75 to 31.10.75
Cotomili	0.615	A	2 fields 6.6.75 to 10.11.75
Petsai distins	0.09	A	20.6.75 to 18.10.75
Cowpeas chinese	0.63	A	14.8.75 to 27.12.75
Carrot de la halle stecklings ...	0.0075	A	19.8.75 to 9.2.76
Bringelle cipaye narain	0.15	A	6.9.75 to 24.12.75
Chillies cipaye	0.0625	A	8.9.75 to 16.2.76
Brede kotachee	1.175	A	2 fields 13.9.75 to 15.1.76
Bean long yard	0.0325	A	18.9.75 to 19.1.76
Cucumber white	0.4725	A	3 times 25.9.75 to 29.1.76
Pipengaille CATT	0.083	A	26.9.75—15.1.76
Lalo	0.205	A	13.10.75—16.2.76
Groundnuts cabri	6.6	A	6 fields 20.10.75 to 1976
Pipengaille	0.02	A	27.12.75—1976

Experiments

15.32 The station provides facilities to specialist divisions for carrying out experiments. There were:

I. *By scientific Officers, Plant Pathology Division.*

1. Trials with imported varieties of Peas and Beans.
2. A fungicidal trial on bean variety Long Tom.
3. A trial on bean variety Victory.
4. A seed treatment/fungicidal trial on peas local.

II. *By scientific Officers, Agricultuarl Division*

1. A variety on Lettuce.
2. Garlic variety Feng Shan Sel No. 1 for bulking and observation.
3. Trial on an imported variety of leeks.

Manipulation Section

15.33 Seeds are produced on the station or on other stations and are sent to Barkly Experiment Station for processing and storage.

After processing 16,417.104 kgs of various seeds (Acacia, Beans, Rice, Peas, Groundnuts etc.) were issued to seed store.

10,357 units and 1.5 kgs of seeds (fruits and ornamentals) were issued to nursery section. 3.381.8 kgs of seeds (pulses) which were unsuitable for seed production were sold.

15.34 DISPOSAL OF PRODUCE

(1) Issued free to other stations and Government Institutions:

		Rs.
Plants	...	2,256 55
Seeds	...	16,012 24
TOTAL	...	18,268 79

(2) Items sold:

Plants	...	21,840 00
Seeds	...	56,383 10
Produce	...	5,282 50
Bulletins	...	341 00
TOTAL	...	83,846 60

In addition, seeds worth Rs 2,006.15 were issued on SF 13 to Development Works Corporation and Ministry of Cooperatives.

PAMPLEMOUSSES EXPERIMENT STATION

SENIOR TECHNICAL OFFICER: I. H. SASSA

15.35 Construction of two small concrete ditch ponds for facilitation surface irrigation in the fields.

Weather Conditions

15.36 Conditions were normal except in February due to passage of cyclone *Gervaise*.

Cropping Programme

15.37 The tobacco plantations suffered from Bacterial wilt. 3,706 kilos of green leaves had been harvested and 411.9 kilos of cured leaf had been sent to the Tobacco Board. Average price cured leaf per kilo (net wt.) was Rs 10.42.

Peas local planted for seed production suffered from Powdery Mildew despite applications of Thiovit fungicide and yields were poor.

The following crops were planted during the year.

Crops	*Acreage*
Groundnuts local Cabri	6.85 arpent
Groundnuts Schulamit	0.25 „
Groundnuts Virginia Bunch ...	0.25 „
Sweet Potatoes SM varieties	0.12 „
Watermelon	1,120 sq. metres
Tobacco NC 95	0.50 arpent
Peas local	2.65 „

Experiments

15.38 (i) By Scientific Officers of the Agricultural Division:

Tobacco

(a) One breeding experiment

(b) One variety trial

(c) One Nitrogen fertilisation trial

(ii) By Scientific Officers, Plant Pathology Division

(a) Beans

One fungicide trial on the control of powdery mildew.

(b) Potatoes, tobacco etc.

One rotational trial on the following crops:
Potato, Bean, Groundnut, Ginger, Tomato, Local and tobacco.

(c) Ginger

One fungicide trial on the chemical control of Ginger Blight.

(d) Soya Beans

(e) Tomatoes

One bacterial wilt on 13 varieties of tomatoes.

(f) Okra

One variety trial on four varieties of Lalo.

(g) One variety trial on six varieties of Brinjals.

Disposal of Produce

15.39 Sent to Abercrombie Nursery 7,168 potted plants for sales.

Sent to Barkly Experiment Station 4,423 potted plants for sales.

Sent to Rivière des Anguilles Demonstration Centre, 72 potted plants for planting.

Sent to Central Experiment Station and Trunk Road, 40 potted plants for planting.

Sent to Plaisance Experiment Station, 40 potted plants for planting.

Sent to Ministry of Health S. S. R. Hospital, 34 potted plants for planting.

Sent to Barkly Experiment Station as seed

Soya Beans	47.75	kilos
Tomatœs	20.45	,,
Lettuce Mignonette	6.628	,,
Rave Blanche	40.00	kilos (with trash)
Groundnuts local Cabri	1,643.00	,,
Beans Long Tom	485.00	,,
Peas Local	741.00	,,

Sales

Coconuts (culled)	452	units
Watermelon	236.0	kilos
Mangœs	216	units
Letchi	650	,,
Tomatœs	34.0	kilos
Potatœs	73.0	,,
Groundnuts Schulamit	304.0	kilos
Coconuts Cabbages	37	units
Chinese Cabbage	94	,,
Beans local Red (Haricot pale) ...	128	kilos
Sweet Potatœs	458	,,
Lalo	74	,,
Brinjals	64	,,
Asparagus	1.5	,,

Total revenue for Tobacco Rs 4,294.14

Total revenue collected for the year was Rs 5,401.30.

ROYAL BOTANIC GARDENS

SENIOR TECHNICAL OFFICER: I. H. SASSA

Development

15.40 Replacement of the fence around the stag pen with chain link fencing had been started. Reconstruction of the boundary walls damaged by cyclone *Gervaise;* levelling of lawns and planting of grass were done. Repairs to the wooden bridge leading to the Kiosk of the Grand Lac and rethatching of several kiosks were also carried out.

General

15.41 The Gardens suffered greatly from cyclone *Gervaise* in February, and had had to be closed to the public for nearly two months. Many trees had died and will have to be replaced. A survey of all the plants found in the Gardens was started with the help of Dr. H. Julien and Mr. Gueho of the Mauritius Herbarium. The preparation of New Sectional plants of the Gardens was started. 182 plants had been planted in the Gardens during the year.

Livestock

15.42 There were 16 stags—seven males and nine females Originally, there were 17 stsags but one female died during the month of April. There were also 14 tortoises—six females, three males and five young ones.

Visits

15.43 157,491 persons and 46,533 school children visited the Gardens during the year.

ABERCROMBIE NURSERY

SENIOR TECHNICAL OFFICER: I. H. SASSA

Development

15.44 Terracing of fields 16 and 21 had been carried out in order to reduce soil erosion. Three small earth ponds 4 feet by 4 feet by 3 feet high have been built with cement blocks.

Weather Conditions

15.45 Climatic conditions were normal except in February when cyclone *Gervaise* occurred and at the end of the year when drought conditions prevailed.

Cropping Programme

15.46 *(a)* Propagation programme.

2,341 Malayan Dwarf Red and 2,433 Malayan Dwarf Yellow coconuts were received from Malaysia in September and were sown immediately as received. These coconuts had been imported so as to re-establish the coconut plantations of the island which were damaged by cyclone *Gervaise.*

Germination of the nuts was good and by the end of December 1975, approximately 1,600 of the germinated coconut seedlings had already been sold to the public.

Cuttings propagated during the year 1975 ...	43,119
Seeds sown during the year 1975	11,205
Layers and grafts	528

(b) The following crops were planted for production of seed:

Crops	*Acreage sq. feet*
Brede de Chine Bouquet	1,260
Chillies Chinese Giant	2,890
Brede de Chine Bouquet	2,000
Manioc Bourbon White	3,960
Manioc Bourbon Yellow	1,620
Margoze	2,420
Watermelon	880
Okra	276
Brinjals Rosita	540

Experiment

15.47 By Scientific Officers of the Agricultural Division.

Observation plots of three varieties of Pigeon Pea.

Disposal of Produce

15.48 The folowing had been sent to other stations for planting and also for sales:

Seedlings	419
Cuttings	4,567
Layers and grafts	120
Coconut seedlings	256
Maison Rouge mango seeds ...	2,863

Sales during the Year

Seedlings	12,752 units
Cuttings	8,572 „
Layers and grafts	525 „
Coconuts seedlings	3,260 „
Watermelon	1,164.0 kgs
Grapes	25.25 lbs
Mascarena revaughanii seeds ...	180 units
Sweet potatœs	26 kgs
Bitter Gourd	2 lbs
Mango fruits	27 units
Guide de Culture Potagere et Vivriere	200 booklets
Masson fruits	6.5 lbs
Cassava	210 kgs

Total revenue collected for the year was Rs 15,887.13.

RICHELIEU EXPERIMENT STATION

SENIOR TECHNICAL OFFICER—Y. L. KONG TING LUN

Development

15.49 On the 21st April, 1975, a livestock feedlot was built and supervised separately by the livestock section. However, during the period January and April, the station has so far been provided with a total of 625,890 kgs canes from Tea Development Authority and 189,400 tons fodder to be fed to the cattle.

The construction of a slurry pit was completed by August, 1975 whereas the construction of a store for materials was stopped as all labour was transferred to the construction of a second feedlot.

Weather Conditions

15.50 There was generally rain except in February due to the advent of cyclone *Gervaise*.

CROPPING PROGRAMME

Tobacco

15.51 The crop in summer was mainly for seed production. The area planted and the quantity of seeds produced for each variety is given below:

Variety	*Type*	*Field No.*	*Hectareage*	*Seed Produced*
				kgs.
SC 66 ...	Flue cured	B1F3	0.4 hectare	3.5
SC 71 ...	,,	B1F3	0.75 ,,	0.2
NC 95 ...	,,	B3F4	0.60 ,,	11.5
Y.M. ...	,,	B3F4	0.72 ,,	10.0
Amarello ...	Air cured	B3F5	0.26 ,,	4.0
			2.055 hectare	29.2

The second season was planted in September and consisted of 0.18 hectare of SC 66, 0.18 hectare of NC 95 and 0.18 hectare of air cured Amarello. Average price per kg of cured leaf obtained was Rs 10.76 which is slightly higher than that of last year (Rs 10.37). The tobacco leaves were all in barn using firewood.

Sweet Potato

The varieties SM1, SM2, SM3 and SM4 were planted with the object of keeping enough planting material to provide to other stations or planters. They were grown as interrow crop in the mixed orchard Block 3 Field 3. Total area planted was 0.3 hectare.

Manioc

0.04 hectare of manioc, variety Nestor was planted in July. This will be harvested next year. Last year's planting of about 0.4 hectare was severely affected by drought.

Asparagus

The asparagus plantation in Block 3 Nursery has been uprooted and a new plantation (about 0.1 hectare) from the old crown has been established. Harvest will start by next year.

Luffa

A new variety of luffa from the Chinese Agricultural Mission was planted in September (area 0.03 hectare). Yield/hectare 20 tons.

Canes

The area harvested was 26.6 acres. 204 tons 580 kgs cane from 16.6 acres were sent to Medine Sugar Estate and 206 tons 935 kgs cane plus tops were sent to Livestock Breeding Section to be fed to cattle.

The following crops were planted for seed production:

Crop	*Acreage acres*
Tomato Marglobe	0.16
Tomato Money Maker	0.01
Cabbage local	0.16
Brede de Chine Bouquet	0.25
Bean Victory	3.70
Pea local	3.50
Bean Pioneer	4.20
Bean local Red	3.50
Bean long Tom	5.60
Maize local	2.00
Bringelle Farcie	0.15
Pomme d'amour local	1.35
Asparagus bean	0.03
Watermelon	2.53
Groundnut local Cabri	11.30
Maize (fodder)	11.5
Sugar Cane (Planted in 1971—1974) ...	22.4

Orchards

The orchards except mango orchard were severly affected by cyclone *Gervaise*. The letchi orchard produced a few fruits only whereas a fairly good mango crop was sold by tender.

Experiment

15.52 The following experiments were carried out by Scientific Officers of the Agricultural Division.

Tobacco

One variety trial on flue cured tobacco (YM, SC 66, NC 95, Speight G 28, Speight G 33, Coker 347, SC 71, SC 72).

One fertilizer trial

One breeding experiment

One experiment to determine the optimum time of tobacco planting.

Tomato

An observational trial on 13 varieties namely Venus, Geante, Kaki, Regine, Marglobe, Saturn, ES 24, Money Maker, St. Pierre, Analu FNR, Heinz 1350, Heinz 1370, Marianne and Marmande.

Bean

An experiment to assess the yield and the agronomic characteristics of ten beans varieties (Pinto, Fin de Bagnole, Deuil de Precoce, Red Land green leaf, Prince Super production, Long Tom, Victory, Pioneer and Local Red).

Okra

Seed multiplication of one variety TAE 38.

DISPOSAL OF PRODUCE

15.53 *(a) Sold*

		Rs cs
Tobacco	2238.8 kgs of flue cured leaves	24,099.25
	383.4 kgs of air cured leaves	2,146.90
Adjustment on purchase price of tobacco 1974—75		9,268.38
Milk	7073.5 litres at 60 cents/litre	4,244.10
Orange	385 units at to–50 cents/unit	116.95
Grape	4.7 kg at Rs 6.—/kg	28.20
Coconut	61 units at 25—75 cents/unit	44.25
Mango	1659 units at 20–75 cents/unit	904 05
Eureka frost lemon	133 units at 25 cents/unit	33.25
Ponkan	25 units at 40 cents/units	10.00
Watermelon	6951.25 kgs at 40–50 cents/unit	3,254.30
Sweet potato	1023 kgs at 25–50 cents/kg	430.15
Tangelo	2 units at 30 cents/unit	.60
Brede de chine	68 kgs at 50 cents/kg	34.00
Tomato	1213.5 kgs at 40 cents/Rs 2.—/kg	1,001.25
Cabbage	398 unit at 40 cents/unit	159.20
Pomme d'amour	2471.75 kgsat 80–100 cents/ kg	2,223.80
Guava	7.5 kgs at 100 cents kg	7.50
Bean (greenpod)	165 kgs at 80 cents//kg	132.00
Bringelle	64.5 kgs at 70 cents/kg	45.15
Luffa	192 kgs at 70 cents/ kg	174.45
Letchi	225 units at 10 cents/unit	22.50
Maize shelling	20954 kgs shelled at Rs 15.—/ton	314.20
Stone	15 lorryload at Re. 1.—/lorry	15.00
	TOTAL REVENUE	48,709.43

(b) Sent to Abercrombie Nursery

480 mango seedlings variety Maison Rouge.

(c) Sent to Marketing Board

50 tangelo and 20 oranges.

(d) Sent to Barkly Experiment Station

1,050 kgs of groundnuts local cabri.
3,004 mango seeds variety Maison Rouge
924 mango seeds variety Baissac
850 Eureka Frost Lemon
1,465 Fruits watermelon Sugar Baby
631 units bringelle farcie
104. 5 kgs brede de chine bouquet
4,104 kgs pomme d'amour local
23 kgs cabbage
175. 5 kgs tomato marglobe
77. 5 kgs tomato Money Maker
516. 5 kgs peas local
8.15 kgs Aspargus bean
856. 6 kgs. bean local red
2,026. 7 kgs bean long tom
1,970. 5 kgs bean victory
420 kgs bean Pioneer

(e) Given free of charge

6. 2 kgs tobacco seeds variety Y.M.
3. 0 kgs tobacco seeds variety SC 66
6. 5 kgs tobacco seeds variety NC 95
3. 5 kgs tobacco seeds variety Amarello

} To Tobacco Board

To Charitable Institutions

15 kg Beans
60 kg Pomme d'amour
15 kg Tomatoes
60 Coconuts
20 kg Pipengaille

VISITS ON STATION

15.54 There were visits from students of the University of Mauritius and students from Eden College.

SENIOR TECHNICAL OFFICER — L. LI TING WAI

Weather Conditions

15.55 The weather was normal during the year except in February when cyclone Gervaise occurred.

Cropping Programme

FIELD

15.56 The total weight of green tea leaves harvested during the year amounted to 424,812 half kgs as compared to 461,389 half kgs for the previous year.

The table below shows the monthly production in half kilos also expressed as a percentage of the year's total for the past four years.

TABLE III

MONTHLY YIELDS AND PERCENTAGE FOR 1972 TO 1975

Month	*1972*		*1973*		*1974*		*1975*	
	Yield (half kgs)	*% Total*	*Yield (half kgs)*	*% Total*	*Yield (half kgs)*	*% Total*	*Yield (half kgs)*	*% Total*
January ...	61,578	14.91	73,056	16.58	80,748	17.50	90,797	21.38
February ...	30,872	12.32	54,520	12.37	52,502	11.59	20,575*	4.84
March ...	53,342	12.92	71,808	16.29	72,146	15.64	67,824	15.97
April ...	47,286	11.45	57,802	13.11	53,764	11.65	47,002	11.06
May ...	37,490	9.08	27,988	6.34	31,930	6.92	48,538	11.43
June ...	15,576	3.77	11,766	2.66	11,684	2.53	18,824	4.43
July ...	9,894	2.40	3,758	0.85	4,658	1.01	5,544	1.30
August ...	7,696	1.86	4,924	1.09	2.330	0.50	4,602	1.08
September ...	16,526	4.00	9,390	2.17	10,082	2.19	4,120	0.96
October ...	24,720	5.98	41,782	9.47	34,066	7.38	28,900	6.80
November ...	40,720	9.86	36,226	8.22	39,534	8.57	38,200	9.00
December ...	47,274	11.45	42,866	10.85	67,950	14.52	49,886	11.75
TOTAL ...	412,990	100.00	440,788	100.00	461,389	100.00	424,812	100.00

*Low yield owing to cyclone '*Gervaise*'

15.57 EXPERIMENTS

Experiment 1 Field 14, 15

Experiment 2 Field 8

Experiment 3 Field 9-10

Experiment 5A Field 16, 17

Experiment 7 Field 4

Experiment 8 Field 4

Experiment 9 Field 2

Experiment 10 Field 1

Observation Plots 0B1 to 29 Field 18, 19

Representative Plots

Field 18, 19

Started on June 1974

Chloroform test carried out from 1.12.74 to 18.2.75

Pruned for rooting trial on 23.6.75

No. of clones 78

Field 14, 15: Observation Plot (OBS)

Started 3.5.75

Chloroform test carried out from 2.10.75 to 20.11.75

Pruned for rooting trial on 31.6.74 to 1.7.75

No. of selected clones 8

Grafting

To determine best time for grafting at Wooton Nursery and tea seed garden Reduit.

Grafts Pruned at Wooton Nursery as from 15.6.74 to 3.7.75.

TABLE IV

AVERAGE YIELDS IN HALF KGS. PER ARPENT

Year	*Half Kgs/arpent*
1971 ...	... 6,514
1972 ...	... 5,921
1973 ...	... 6,320
1974 ...	... 6,615
1975 ...	... 6,091

The named pruning programme is as follows:

Pruned, Unpruned, Deep Skiffed, Un pruned.

Split applications of fertilizer in the ratio 25:5:5 were applied in September, 1975 and January, 1976. Fertilizer was applied at the rate of 1 kg N. for every 50 kg of green tea leaves harvested in the previous year.

Seed Gardens

15.58 Only maintenance work was carried out in the seed gardens as seeds were not collected during the year, there being no demand for them. Many grown up bushes were blown during cyclone *Gervaise*.

Nursery

15.59 Pruning and fertilization in the nucleus clone 1H have been carried out. Cuttings were taken in January, February, November and December and 40,688 were potted.

15.60 Disposal of Produce

Produce	*Sold to*	*Quantity*	
Green tea leaves	Dubreuil Factory	419,540	half kilos
Green tea leaves	Corson Factory	5,272	,,
	TOTAL	424,812	,,

25,725 cuttings were issued to Tea Development Authority.

Staff

Central Experiment Station

Senior Technical Officer	C. Gouges
Technical Officer	Y. N. Chan Kwing Kwan (w.e.f. 16.10.75)
Technical Assistant (Stores)	M. Moheeputh (w.e.f. 6.1.75) up to 19.6.75 D. Nunderchand (w.e.f. 19.6.75)
Technical Assistant (field)	P. Hungley (6.1.75 to 10.4.75) S. Ramphul (w.e.f. 12.9.75)
Field Assistant	M. Moolan
Agricultural Assistant	S. Jawaheer (w.e.f. 16.1.75)
Clerical Assistant	G. Savrimuthu (w.e.f. July 1975) P. Greedharee (w.e.f. 26.11.75)

Plaisance Experiment Station

Senior Technical Officer (acting)	R. Purran (up to 13.11.75)
Senior Technical Officer	I. H. Sassa (w.e.f. 13.11.75)
Technical Assistant	S. Ramgoolam (up to end February)
Technical Assistant	P. Gopaul (w.e.f. March)

Curepipe Experiment Station

Senior Technical Officer (acting) ...	R. Purran (up to 30.4.75)
Senior Technical Officer ...	I. H. Sassa (w.e.f. 30.4.75)
Technical Officer	P. Hanoomanjee (w.e.f. 16.10.75)
Field Assistant	S. Teeroovengadum (August up to 15.10.75)
Technical Assistant	C. Curpen
Technical Assistant	G. M. Sairally (w.e.f. 16.10.75)
Technical Assistant	Ramgoolam (Marc to 31.10.75)
Agricultural Assistant ...	P. Ramnarain (up to 28.5.75)
Agricultural Assistant ...	M. Sukhoo (up to 31.10.75)
Agricultural Assistant ...	M. D. Naiko (w.e.f. 4.11.75)

Abercrombie Nursery

Senior Technical Officer ...	I. H. Sassa (1.1.75 to 1.5.75)
Senior Technical Officer ...	P. Panyandee (2.5.75 to 10.8.75)
Senior Technical Officer ...	F. Lam Kee (as from 11.8.75)
Technical Officer	S. Bissessur
Technical Assistant	D. Jhuboo
Clerical Assistant	B. Sewnundun (as from July 1975)

Royal Botanic Gardens

Senior Technical Officer ...	I. H. Sassa (1.1.75 to 1.5.75)
Senior Technical Officer ...	P. Panyandee (2.5.75 to 10.8.75)
Senior Technical Officer ...	F. Lam Kee (as from 11.8.75)
Technical Officer	S. Bissessur
Technical Assistant	K. Nathoo
Agricultural Assistant ...	P. S. Ramnarain (as from 28.5.75)
Clerical Assistant	A. Rusmally (August 1975 to November 1975)
Clerical Assistant	S. Kaharee (as from 26.11.75)

Pamplemousses Experiment Station

Senior Technical Officer ...	I. H. Sassa (1.1.75—1.5.75)
Senior Technical Officer ...	P. Panyandee (2.5.75—10.8.75)
Senior Technical Officer ...	F. Lam Kee (as from 11.8.75)
Technical Officer	S. Bissessusr
Field Assistants	A. B. Panray M. Cheeroo (6.8.75 to 15.10.75)
Technical Assistant	H. T. Naik
Agricultural Assistant ...	L. Sungkur
Clerical Assistant	A. Rusmally (as from August 19.75)

RICHELIEU EXPERIMENT STATION

Senior Technical Officer	...	Y. L. Kong Ting Lun
Technical Officer ...	...	O. Bissonauth (on leave as from 31.7.75)
Technical Officer ...	...	K. F. Lan Chow Wing (transferred from Reduit to Richelieu and appointed Horticulturist as from 10.3.75)
Technical Officer ...	...	K. Nujjoo (as from 31.7.75)
Technical Officer ...	...	P. Boodna (as from 16.10.75)
Field Assistant ...	...	R. Gowd
Field Assistant ...	...	K. Hurdowar (as from 30.10.75 on study leave as from 15.12.75)
Technical Assistant (field)	...	D. Gunness
Technical Assistant (sales)		T. Jomadar (transferred from Reduit as from 15.3.75)
Technical Assistant (sales)	...	R. Salabeea (transferred to Feed Factory as from 15.3.75)
Technical Assistant ...	...	M. Naiko (from March to October 1975)
Technical Assistant (stores)	...	O. Purahoo (transferred to Livestock Breeding Station Richelieu as from 26.9.75)
Technical Assistant ...	...	J. Etienette (transferred to Livestock Breeding Station Richelieu as from 21.4.75)
Technical Assistant ...	...	L. Mangad (transferred to Livestock Breeding Station Richelieu as from 21.4.75)
Agricultural Assistant	...	P. Beegoo (transferred to Livestock Breeding Station Richelieu as from 21.4.75))
Clerical Assistant (stores)	...	J. Seeboo (appointed July 1974)
Clerical Assistant ...	...	A. Chowriamah (appointed July 1974)
Clerical Assistant ...	...	Kaharee (transferred to Royal Botanic Gardens)
Clerical Assistant ...	...	G. Narain (transferred to Belle Vue as from1.12.75)
Test Chemist ...	...	G. Soobrayen (January to May 1975) J. C. Uckiah (January to April 1975) F. Oodally (January to March 1975)

BARKLY EXPERIMENT STATION

Senior Technical Officer	...	Mrs A. C. Chan Hing Chong (to 3.6.75)
Senior Technical Officer	...	L. Li Ting Wai (as from 3.6.75)
Technical Officer ...	...	Miss D. Wan Hok Chee to 28.5.75 P. Boodhna (21.5.75 to 20.10.75) H. Chummun (as from 16.10.75) D. Bachraz (as from 16.10.75)
Field Assistants ...	...	R. Toorabally D. Ramheet P. C. To Choi Wan (up to September 1975)
Technical Assistants	...	S. Naik S. Pydegadu N. Boolkah D. Nunderchand (to 16.6.75) N. Moheeputh (to 16.6.75)
Assistant Stores Officer	...	D. Coolen
Clerical Assistants ...	...	A. Desvaux Miss H. Gopee G. Poonyth C. Narroo A. Seernauth
Laboratory Attendant	...	Y. Seeruttun

TEA EXPERIMENT STATION

Senior Technical Officer	...	L. Li Ting Wai (up to 1.6.75)
Senior Technical Officer (acting)	...	R. Purran (w.e.f. 2.6.75)
Technical Officer ...	...	D. Reetoo (w.e.f. 25.4.75)
Technical Assistant ...	...	L. Gerard C. Dookhee
Field Assistant ...	...	A. Nagalingum
Agricultural Assistant	...	D. Jankee (up to 17.7.75) Vacant

Weather Conditions

Central Experiment Station

The total rainfall recorded during the year amounted to 1,141 m.m. as compared to 1,370 m.m. the average normal (1965-74).

Rainfall, monthly total (mm) and difference from the average normal for 1965-74.

Month	*Rainfall*	*Average Normal*	*Difference from Normal*
January ...	96	195	— 99
February ...	593	226	+ 367
March ...	115	216	— 101
April ...	63	123	— 60
May ...	77	68	+ 9
June ...	57	79	— 22
July ...	7	79	— 72
August ...	33	82	— 49
September ...	33	48	— 15
October ...	31	33	— 2
November ...	18	77	— 59
December ...	18	144	— 126
TOTAL ...	1,141	1,370	— 229

Plaisance Experiment Station

The total rainfall was 1525.1 m.m. On the day *Gervaise* struck Mauritius (6.2.75), 245.1 m.m. was recorded. From July to end December, a rather severe drought prevailed.

Below is the rainfall record for 1975 compared with the average of the past years.

Month	*Average for 1964–1974 (m.m.)*	*Total Rainfall for 1975 (m.m.)*
January ...	206.6	96.2
February ...	172.0	329.4
March ...	218.0	139.0
April	191.0	174.0
May	129.2	304.5
June	105.3	100.4
July	116.3	66.4
August ...	78.4	67.0
September ...	60.1	52.2
October ...	60.1	15.9
November ...	81.3	62.5
December ...	133.2	117.6
TOTAL ...	1,551.5	1,525.1

Curepipe Experiment Station

The total rainfall was 2,898.2 m.m. The highest rainfall was during the passage of cyclone *Gervaise* on 6.2.1975 when 431.8 m.m. was recorded.

September was an abnormally cold and rainy month. On the other hand October was rather dry.

Below is the rainfall record for 1975 compared with the average of the past ten years.

Month	*Average for 1964–1974 (m.m.)*	*Rainfall 1975 (m.m.)*
January	452.5	303.1
February	435.0	582.4
March	386.3	279.5
April	279.8	227.0
May	220.3	437.4
June	200.8	220.3
July	246.8	110.6
August	233.8	189.1
September	117.9	296.6
October	124.9	32.2
November	123.0	140.3
December	252.4	79.7
TOTAL ...	3,073.5	2,898.2

Abercrombie Nursery

Month	*Rainfall in m.m.*	
January ...	58.0	
February ...	365.0	(Cyclone Gervaise)
March ...	83.2	
April ...	60.1	
May	64.0	
June	55.1	
July	19.6	
August ...	14.2	
September ...	32.2	
October ...	6.1	
November ...	26.5	
December ...	14.8	
TOTAL ...	798.8	m.m. or 31.45 inches

ROYAL BOTANIC GARDENS

		m.m.
January	...	115.31
February	...	313.43 (cyclone Gervaise)
March	...	119.89
April	...	110.49
May	...	185.92
June	...	94.49
July	...	57.40
August	...	69.00
September	...	60.90
October	...	10.66
November	...	92.64
December	...	54.61
TOTAL	...	1,284.74 m.m. or 50.59 inches

PAMPLEMOUSSES EXPERIMENT STATION

		m.m.
January	...	115.31
February	...	313.43 (Cyclone Gervaise)
March	...	119.89
April	...	110.49
May	...	185.92
June	...	94.49
July	...	57.40
August	...	69.00
September	...	60.90
October	...	10.66
November	...	92.64
December	...	54.61
TOTAL	...	1,234.74 m.m. or 50.59 inches

Richelieu Experiment Station

The supply of irrigation water from La Ferme reservoir was regular from February 1975 to the end of November and this has facilitated the implementation of the cropping programme. The total rainfall recorded this year amounted to 665.0 m.m. February was exceptional wet (452.5 m.m.) due to cyclone *Gervaise,* which visited the island on the 6th of that month with a precipitation of 310 m.m.

The weather statistics for the year 1975 are as follows:

Month	*Mean Maximum (°F)*	*Mean Minimum (°F)*	*Rainfall (mms)*
January	91.5	75.9	78.2
February	80.1	65.0	452.5
March	81.5	70.3	48.0
April	84.5	73.6	25.0
May	83.2	73.5	22.0
June	77.4	68.5	7.0
July	72.6	65.4	4.0
August	73.0	63.5	1.5
September ...	74.2	65.0	4.0
October	75.2	64.5	5.5
November ...	84.0	77.6	9
December ...	84.0	73.9	8

Barkly Experiment Station

The total rainfall recorded during the year 1975 amounted to 850.22 m.m. as compared to 1060 m.m., average normal. The passage of cyclone *Gervaise* in February did considerable damage to fruit trees and vegetable plantations. The table below shows the monthly rainfall compared to average normal.

Month	*Actual (m.m.)*	*Average normal (m.m.)*
January ...	143.10	187
February ...	374.10	143
March ...	98.17	193
April ...	32.68	104
May ...	61.58	60
June ...	24.52	38
July ...	6.06	45
August ...	9.48	25
September ...	21.16	21
October ...	12.98	31
November ...	44.27	45
December ...	22.12	109
TOTAL ...	850.22	1061

TEA EXPERIMENT STATION

TABLE I

Monthly rainfall compared with average rainfall relative humidity.

Month	*Rainfall (mm)*	*Average normal (1966–74)*	*Difference from normal*	*% R.H.*
January ...	236.4	384.0	— 147.6	87.6
February ...	582.4	360.1	+ 222.3	89.7
March ...	290.5	284.6	+ 5.9	89.8
April ...	242.5	244.4	— 1.9	92.3
May ...	438.9	177.8	+ 261.0	83.2
June ...	235.9	248.6	— 12.7	89.5
July ...	80.0	281.2	— 201.2	56.7
August ...	165.1	280.8	— 115.7	87.2
September ...	309.3	94.1	+ 215.2	88.9
October ...	28.9	145.5	— 116.5	80.5
November ...	92.2	151.7	— 59.5	90.1
December ...	68.3	241.0	— 172.7	92.5
TOTAL ...	2770.4	2893.8	— 123.4	

TABLE II

Maximum and Minimum Temperature (°F) and differences from normal* for year 1975.

Month	*Average maximum*	*Difference from normal*	*Average minimum*	*Difference from normal*
January ...	77.8	—1.9	62.9	—2.2
February ...	76.5	—2.7	65	— .5
March ...	75.0	—6.9	66.2	— .1
April ...	72.4	—1.6	63.2	—1.1
May ...	70.6	—7.3	60.2	+ .6
June ...	67.3	—6.7	59.3	+1.8
July ...	65.1	—5.1	57.9	+3.5
August ...	65.1	—4	56.4	+3.6
September	65.8	—6	57.7	+0.6
October ...	71.8	—2.1	59	0
November	74.7	+0.2	57.9	—3
December...	75.4	—4.2	61.5	—2.4

*Normal obtained from average temperature recorded at Tea Experiment Station Wooton from 1966–74.

Manipulation Section

Barkly Experiment Station

Item	*Amount Received*	*Weight of clean seeds obtained in kgs*
Acacia local	14.–kgs pods 92.–kgs rough clean seeds	88.750
Acacia Guatemala ...	45.–kgs ,, ,, ,,	25.000
Acacia Peru	33.–kgs ,, ,, ,,	4.950
Asparagus bean	154.410 kgs ,, ,, ,,	15.390
Beetroot	27.800 kgs ,, ,, ,,	7.455
Bringelle Farcie	384 units fruits	3.910
Bringelle Rosita	188 units fruits	0.687
Bringele Cipaye	644 units fruits	2.250
Bokla	57.000 kgs rough clean seeds	29.000
Brede de chine Baton blanc ...	325.600 kgs ,, ,, ,,	56.820
Brede de chine Frisee ...	57.500 kgs ,, ,, ,,	7.695
Brede de chine Hamchoy ...	1.500 kgs ,, ,, ,,	0.272
Brede de chine Bouquet ...	1.875 kgs ,, ,, ,, 107.570 kgs ,, ,, ,,	27.150
Brede Martin	602.800 kgs ,, ,, ,,	43.690
Brede Kotachee	179.000 kgs ,, ,, ,,	127.855
Bean Pioneer	420.000 kgs ,, ,, ,,	282.200
Bean Local Red	1,311.600 kgs ,, ,, ,,	834.000
Bean Long Tom	3,014.700 kgs ,, ,, ,,	1,909.635
Bean Victory	1,970.500 kgs ,, ,, ,, 92.870 kgs ,, ,, ,,	1,131.140
Callebasse	1,400 units fruits	110.600
Cauliflower	1,416 units plants	44.539
Cabbage	23.000 kgs rough clean seeds	3.005
Chillies Cipaye	63.220 kgs fruits	6.600
Chillies chinese Giant ...	1,249 units fruits	1.681
Citrouille	48 units fruits	1.286
Cotomili	612.200 kgs rough clean seeds	179.000
Cowpeas Chinese ...	277.600 kgs pods	86.450
Cucumber White ...	415 units fruits	7.729
Groundnut Local Cabri ...	7,032.000 kgs rough clean seeds	4,936.500
Groundnut Beit Dagan ...	141.000 kgs ,, ,, ,,	67.000
Groundnut Florigiant ...	66.000 kgs ,, ,, ,,	30.000

Item	*Amount received*	*Weight of clean seeds obtained in kgs*
Lalo	84.200 kgs pods	24.375
Lettuce Mignonette ...	10.783 kgs rough clean seeds	4.781
Maize Yellow	916 cobs	41.000
Pipengaille	2,016 units fruits	35.805
Petsai Distins	22.300 kgs rough clean seeds	4.090
Margoze	1.835 kgs + 67 units fruits	1.214
Patole	132 units fruits	1.405
Pomme d'amour ...	4,118.350 kgs fruits	37.500
Peas Chinese	316.500 kgs rough clean seeds	194.500
Peas local	3,645.500 kgs „ „ „	2,694.000
Giraumon	359 units fruits	40.613
Radish	85.200 kgs rough clean seeds	7.835
Rave	584.600 kgs „ „ „	33.900
Salsifis	6.435 kgs „ „ „	1.385
Squash Golden Custard ...	1,707 units fruits	27.158
Tomato Marglobe ...	187.000 kgs fruits	0.550
Tomato Moneymaker ...	77.500 kgs fruits	0.225
Watermelon Sugar baby ...	1,136 units fruits	19.845
Bean Yard Long ...	51.925 kgs pods	17.550
Tomato Venus	11.950 kgs fruits	0.030
Tomato Saturn	8.500 kgs fruits	0.017
Rice TN 1	7,971.000 kgs rough clean seeds	4,615.230

XVI. Livestock Breeding Stations

HEAD OF DIVISION: Y. AUMJAUD, AGRICULTURAL SUPERINTENDENT

16.01 The Livestock Breeding Stations include stations at Curepipe, Richelieu, Palmar and the Poultry Breeding Centre. The Richelieu Station which was under the Richelieu Experimental Station was transferred to this division on the 29th March 1975.

CUREPIPE LIVESTOCK BREEDING STATION

MILCH CATTLE

16.02 At the end of the year, the Curepipe Livestock Breeding Station carried a total of 236 head of milch cattle—66 males and 170 females. There were 61 calvings during the year—28 males and 33 females. The average birth weight was 30.0 kgs. The number of calves weaned during the year were 25 males and 23 females. The average weight at weaning, at 90 days, was 80.0 kgs. There were three cases of stillborn and one case of abortion.

16.03 Three bull calves, six heifer calves and four cows died during the year and 13 bulls and 43 cows were sold for slaughter.

16.04 Over a lactation period of 305 days, the average production was 6.1 kgs of milk per head per diem. The first calves yielded an average of 5.0 kgs of milk per head per diem; the best performer yielded 6.5 kgs with a peak of 11.0 kgs. Second calves yielded an average of 6.7 kgs of milk per head per diem; the best performer yielded 8.1 kgs with a peak of 12.5 kgs. Third calvers yielded an average of 6.2 kgs of milk per head per diem; the best performer yielded 7.8 kgs with a peak of 16.0 kgs. Cows with more than three calvings gave an average of 6.4 kgs of milk per head per diem; the best performer yielded 7.0 kgs with a peak of 12.0 kgs.

16.05 Nearly all cows, 5 days after calving, as from April 1975 were shifted gradually from normal cowfeed to a molasses/bagasse feed experiment conducted by the Animal Production Division.

16.06 The total quantity of milk produced during the year was 101,037.9 litres, out of which 80,547.5 litres were issued to the Milk Pasteurisation Plant for delivery to hospitals, 19,866.8 litres were fed to calves, piglets and rabbitlings, 536.5 litres were used for analysis and 87.1 litres were discarded due to mastitis.

Pigs

16.07 At the end of the year the total number of pigs at the station was 51: 20 males and 31 females. 322 piglets were farrowed with an average of 10 piglets per litter. The average birth weight of the piglets was 1.3 kgs. 27 litters were weaned with an average of 5 piglets per litter. The average weaning weight at 8 weeks old was 13.5 kgs per piglet.

16.08 7 sows, 3 boars, 4 gilts and 2 male pig weaners were sold for slaughter. 116 weaners—65 castrated males and 67 females were sold to the Pig Credit and Marketing Co-operative Societies for distribution to members of co-operative societies throughout the island. 193 piglets, 2 pig weaners and 1 sow died during the year.

Rabbits

16.09 At the end of the year the total number of rabbits was 186. The number of rabbitlings born during the year was 259. 84 weaners were sold to local breeders. Two males and one female were issued to the Extension Services. 41 males, 37 females and 84 rabbitlings died during the year.

PALMAR LIVESTOCK BREEDING STATION

Milch Cattle

16.10 At the end of the year the Palmar Livestock Breeding Station carried a total of 109 head of cattle—26 males and 83 females. There were 26 calvings during the year—10 males and 16 females. The average birth weight was 27 kgs and the average weight at 90 days was 58 kgs.

16.11 During the year 2 heifers, 11 cows and 27 bulls were sold for slaughter and 2 cows for breeding purposes; one pregnant heifer was issued to the Flacq Demonstration Centre and one pregnant cow was given to the University.

16.12 16 deaths were recorded during the year—4 cows, 2 heifers, 1 bull and 9 calves.

New Zealand Cattle

16.13 At the end of the year the station carried a total of 824 head of New Zealand cattle—194 males and 630 females. There were 244 calvings during the year—117 males and 127 females. In line with the project of the Ministry to boost up milk production in the country 90 pregnant heifers and 14 cows with their 14 calves were distributed to cowkeepers through the Rural Development Programme of the Ministry of Economic Planning and Development. By the end of the year under review 52 weaned calves were returned by the cowkeepers as per the agreement with the Ministry of Agriculture and Natural Resources and the Environment. 10 selected adult bulls were transferred to the station from Richelieu Livestock Breeding Station for use as sires on New Zealand cattle.

16.14 During the year 129 head of cattle were sold for slaughter out of which 97 were males and were sold mainly for the Muslim festival, Eid-El-Adha.

Herd Cattle

16.15 At the end of the year there were 329 head of Zebu cattle—90 males and 239 females. There were 89 calvings during the year. 68 head of Zebu cattle (males and females) were sold—24 males to carters and the remaining mainly females to the Mauritius Meat Producers Association for breeding and some animals unfit for breeding were sold for slaughter. 9 selected bulls were transferred to Rodrigues for use as sires for upgrading the herd in the island. 18 animals died during the year.

Goat

16.16 At the end of the year there were 278 goats—98 males, 180 females of the Anglo-Nubian, Jumna Pari breeds and their crosses. During the year 163 kids were born—85 males and 78 females. The average birth weight was 2.5 kgs and the average weaning weight was 18.5 kgs. 15 weaners were made available to farmers through the Extension Services, 14 goats were disposed of for slaughter, 16 adults and 56 kids died.

Sheep

16.17 At the end of the year there were 9 sheep on the station. During the year 13 lambs were born. Over the same period, 7 sheep died and 36 were sold. These sheep were originally imported from New Zealand in 1970: 12 Corriedale ewes and 12 Poll Dorset ewes and 2 Corriedale rams and 2 Poll Dorset rams. They remained in Roche Bois Quarantine Station from June to August when they were transferred to the Veterinary Services Division

at Reduit. A fair number of deaths took place especially at Reduit due mainly to pneumonia and heavy parasitic infestation. Towards the middle of 1971 they were transferred to Palmar Livestock Breeding Station; there again a fair number of deaths occurred due to pneumonia and parasatic infestation. It was therefore concluded that these breeds of sheep will not thrive under our conditions. Consequently early in 1976 it was decided to dispose of the remaining 9 sheep.

Pigs

16.18 At the end of the year there were 185 pigs of all ages at the station. 602 piglets were farrowed with an average of 9.1 piglets per litter. The average birth weight and weaning weight was 1.0 kg and 7.5 kgs respectively. A total of 248 piglets and old breeders were sold to the Pig Credit and Marketing Co-operative Societies for distribution to breeders and some for slaughter. Over the same period 319 deaths were recorded mainly among the piglets.

Rabbits

16.19 At the end of the year the station carried a total of 42 rabbits— 10 males, 10 females and 22 rabbitlings. During the year 69 rabbitlings were born; 28 weaners were sold to farmers. The total death registered was 33— 2 males, 3 females and 28 rabbitlings.

Milk Production

16.20 During the year 54,273.1 litres of milk were produced. The average yield was 4.2 litres per cow per day. Out of the total milk produced 26,241.6 litres were fed to calves, kids and piglets, 21,508 litres were supplied to the Flacq Hospital and the remaining 6,523.5 litres were sold to staff on the station.

Miscellaneous

16.21 Manure was started to be sold to the public as from mid-June. By the end of the year 1,170.120 tons were sold and 48.320 tons were issued to stations.

16.22 The Agricultural Division carried an experiment on onion. 40 lbs of onion (March' setts) were sown. The yield recorded was 1,664 lbs and it was sold on the station.

Development

16.23 Various constructions were undertaken by the station.

(1) A new water reservoir of 26 ft × 26 ft × 9 ft was built. The work started on 24th February and was completed by the end of July, 1975. The new reservoir became operative in August.

(2) A New Goat Shed was built. The work started on 13th February and was over by the 2nd week of September. The shed consisted of 17 pens and became operative in the last week of September.

(3) A new corral was built so as to facilitate treatmnt and weighing of animals. The dimensions of the corral are 50 ft×50 ft with a race of 25 feet.

(4) The demonstration shed had to be built due to damage done by cyclone and the old piggery also repaired.

(5) A new paddock was made with appropriate mangers and water trough. The length of the manger is 115 feet.

(6) During the month of February 1975 the weighbridge broke down and the Engineering Division repaired it. It became operative as from 13th May, 1975.

(7) The station was provided during mid-September with a 3-phase electricity to run the water pump for the filling of the two water reservoirs on the station.

(8) A new shed 170 feet long and 20 feet wide was constructed for the New Zealand cattle. The work which started in March 1975, was not yet completed at the end of the year.

(10) In the month of September, work started on a large Dairy Unit capable of holding 300 dairy cows and followers to weaning in cubicles. The work was still going on at the end of the year.

RICHELIEU LIVESTOCK BREEDING STATION

16.24 The Richelieu Livestock Breeding Station which formed part of the Richelieu Experiment Station and was under the control of the Agricultural Superintendent (Stations) was transferred to this Division as from the 29th March 1975.

16.25 At the end of the year the station carried a total of 247 head of New Zealand cattle—8 bulls, 37 cows, 151 heifers and 51 calves. During the year, 88 heifers calved, one of which gave birth to twins. In line with the Ministry of Agriculture and Natural Resources and the Environment Cattle Distribution Programme, 69 pregnant heifers, 40 cows with their calves at foot and 11 cows in milk, were distributed to cowkeepers through the Ministry of Economic Planning and Development. The Mauritius Meat Producers' Association purchased some cattle for breeding from the station—6 bulls, 34 heifers, 7 cows and 4 calves were released to them.

16.26 141 head of animals were sold to the Mauritius Meat Authority for slaughter. 10 sires were transferred to Palmar Livestock Breeding Station. The deaths registered during the year were as follows: 4 bulls, 1 cow, 2 heifers and 6 calves.

Milk Production

16.27 During the year 22,092.8 kgs of milk were produced, out of which 1,398.3 kgs were discarded due to mastitis. 26 kgs were sent as sample to the laboratory, 10,981.8 kgs were fed to calves and the remaining 9,686.7 kgs were sold to staff.

Development

16.28 One slurry pit was built and it became operative as from the 23rd September.

16.29 As from the beginning of October the construction of a Diary Unit similar to the one at Palmar was started and the work was going on at the end of the year.

POULTRY BREEDING CENTRE

16.30 The Poultry Breeding Centre maintained parent stock of Sykes Tinted and introduced Sykes Ranger from F & G Sykes for the production of layers. In addition, the Centre maintained Ross I broiler parent stock for the production of broiler chicks.

16.31 During the year the Poultry Breeding Centre hatched 120,142 chicks. 38,007 day-old pullets, 9,160 month-old pullets for the production of eggs were sold to poultry breeders. To help the production of poultry meat, 21,377 day-old broilers and 50,846 day-old and month-old male chicks from laying stock were sold. 5,435.455 kgs of dressed chickens and culls and 9.650 kgs live broilers were sold for table. The Centre also provided 28 chickens to the Animal Health Laboratory for the testing of vaccine, 120 month-old to the Extension Service and 72 day-old chicks to the Analyst Division of the Ministry of Health.

Hybrid Sykes Ranger

16.32 A total of 55,015 hybrid Sykes Ranger chicks were produced of which 21,680 day-old pullets, 4,243 month-old pullets, 28,832 day-old cockerels and 305 month-old cockerels were sold for eggs and poultry meat production respectively.

Hybrid Sykes Tinted

16.33 A total of 43,948 hybrid Sykes Tinted chicks were produced of which 16,327 day-old pullets, 4,917 month-old pullets, 21,673 day-old cockerels and 36 month-old cockerels were sold.

Broiler Chicks

16.34 A total of 21,183 broiler chicks were produced, 2,367 chicks carried forward from the year 1974, 21,377 were supplied to small poultry breeders.

Egg Production

16.35 During the year 262,446 eggs were produced at the Poultry Breeding Centre. The monthly production of the various breeds maintained during the year was as per Appendix A.

16.36 Out of the 262,446 eggs produced, 2,194 eggs carried forward from the year 1974, 169,407 eggs were incubated for the supply of chicks to the public, 16,656 were sold for table, 2,880 eggs were issued to the Animal Health Laboratory for the production of vaccines, 2,580 eggs to the Artificial Insemination Laboratory and 69,565 eggs to the Brown Sequard Hospital, Ministry of Health, also for table. The stock in hand at 31st December, 1975 was 1,273 eggs.

Reproductive Performance

16.37 During the year under review, 120,142 chicks were hatched. The average fertility and hatchability were 87.1% and 72.2% respectively for all eggs set.

16.38 The monthly reproductive performance of all breeders was as per Appendix B.

16.39 The monthly reproductive performance of all parent stock breed-wise was as per Appendix C.

Import of Stock

16.40 To meet the demand of layers, the following were imported from the United Kingdom:

(i) Sykes Ranger Parent Stock 1180

(ii) Sykes Tinted Parent Stock 494

16.41 For the production of boiler chicks, 306 day-old Ross I Parent Stock pullets and 48 day-old cockerels were imported.

Animal Health

16.42 The Poultry Breeding Centre carried an average of 13,186 birds of all ages on a monthly basis. The mortality in the adult stock during the year was 7.0% and in the group 0-12 weeks, the mortality was 10.4%.

Monthly Performance of all Parent Stock Breedwise for the Year 1975

Month	Parent Sykes Brown					Parent Sykes Tinted					Parent Ross Broiler				
	Number of eggs set	Number fertile	Number of Chicks hatched	% fertility	% hatched of Fertile	Number of eggs set	Number fertile	Number of Chicks hatched	% fertility	% hatched of Fertile	Number of eggs set	Number fertile	Number of Chicks hatched	% fertility	% hatched of Fertile
January ...	—	—	—	—	—	—	—	—	—	—	3108	1274	864	40.9	67.8
February ...	2686	2200	1463	81.9	66.5	2068	1768	1399	85.4	79.1	2294	1415	1061	61.6	79.9
March ...	8526	7455	6170	87.4	82.7	5264	4605	3799	87.4	82.4	1980	1739	1433	87.8	82.4
April ...	11769	10539	8899	89.5	84.4	7145	6311	5480	88.3	86.8	2842	2393	1856	84.2	77.5
May	8443	7622	6453	90.2	84.6	5226	4671	4075	89.3	87.2	1063	818	659	76.9	80.5
June	8271	7563	6478	91.4	85.6	6166	5649	4989	91.5	88.3	1521	1249	1064	82.1	85.1
July	9632	8730	7308	90.6	83 7	7085	6484	5675	91.5	87.5	—	—	—	—	—
August ...	7280	6426	5342	88.3	83.1	6017	5442	4762	90.4	87.5	1535	1343	1143	87.5	85.1
September ...	8307	7124	5551	85 7	77.9	8066	7215	6270	89.4	86.9	5979	5612	4897	93.8	87.2
October ...	5880	4881	3668	83.0	75.1	4585	4010	3294	87.4	82.1	4453	4197	3587	94.2	85.4
November ...	5544	4387	3053	79.1	69.6	5043	4203	3312	83.3	78.8	4169	3860	3185	92.5	82.5
December ...	1174	910	630	77.5	69.2	1351	1083	893	80.1	82.4	2974* 1961	1787	1434	91.1	80.2
TOTAL ...	77512	76837	55015	87.5	81.1	58016	51441	43948	88.6	85.4	33879	25687	21183	83.1	82.4

* Set in December 1975 chicks came out in January 1976.

Monthly Reproductive Performance

Month	*No. of egg set*	*No of fertile*	*No of chicks hatched*	*% Fertility*	*% hatched of Fertile*	*% hatched of all eggs set*
January ...	3,108	1,274	864	40.9	62.8	27.8
February ...	7,084	5,383	3,923	76.3	72.8	55.6
March ...	15,770	23,799	11,402	87.5	82.6	72.3
April ...	21,756	19,243	16,235	88.3	84.3	74.4
May	14,732	13,111	11,187	88.9	85.3	75.9
June	15,958	14,461	12,531	90.6	86.6	78.5
July	16,717	15,214	12,983	91.0	85.3	77.6
August ...	14,832	13,211	11,247	89.0	85.1	75.8
September ...	22,352	19,951	16,718	89.2	83.7	74.7
October	14,918	13,088	10,545	87.7	80.5	70.6
November ...	14,756	12,450	9,550	84.3	76.7	64.7
December {	2,974*	3,780	2,957	84.2	78.2	65.9
December {	4,486					
TOTAL ...	169,407	144,965	120,142	87.1	82.8	72.2

* Set in December chicks came out in January 1976.

Record of Monthly Egg Production — 1975

Month	*P. S. Brown*	*P. S. Tinted*	*P. S. Ranger*	*P. S. Ross*	*Mixed Hybrid*	*Total*
January ...	8,771	8,250	7,485	3,572	1,924	30,002
February ...	3,079	6,633	8,560	2,313	1,237	21,822
March	2,725	6,741	11,110	2,623	2,026	25,225
April	70	6,636	10,859	2,612	3,072	23,249
May	—	6,683	10,390	1,391	2,556	21,020
June	—	7,610	9,727	1,594	2,120	21,051
July	—	7,290	9,502	8	2,195	18,995
August	—	7,249	8,772	2,848	2,270	21,139
September ...	—	7,248	7,795	5,397	2,138	22,588
October ...	—	7,056	7,157	5,144	2,113	21,290
November ...	—	6,339	6,389	4,536	1,910	19,174
December ...	—	4,437	5,919	4,493	2,042	16,891
TOTAL ...	14,645	82,172	103,665	36,531	25,603	262,446

XVII. Division of Extension Services

HEAD OF DIVISION: L. R. BRUNET, DIVISIONAL SCIENTIFIC OFFICER

CONTACT WITH FARMERS

(a) *Individual Contacts*

17.01 The number of individual visits for advisory purposes to crop plantations and livestock breeders was of the same order as in the previous year. Over 21,800 field visits were paid to plantations covering the whole range of crops grown over the island (excluding Tobacco) with greater attention given to more important crops viz sugarcane, potato, maize, groundnut, onion, rice, tomato and tea.

17.02 Since the past few years information has been collected with the cooperation of the Sugar Industry Fund Board on all sugar cane planters regarding acreage, yields, agro-climatic conditions, varieties, age of plantation and so on to obtain an indication of potential improvements and planters are advised accordingly necessitating sometimes visits to their residence in evenings. During the year, 900 planters were contacted under this project.

17.03 The number of individual visits paid to Livestock breeders amounted to 4,000 and covered all the major classes of livestock viz cattle, pig, goat, poultry and rabbit. Operating with limited staff, efforts were directed in regions of greater livestock concentration. Late during the year when the imported New Zealand Cattle were distributed under the Rural Development Programme, each recipient cow keeper was visited twice monthly for control of feeding, milk yield, etc. and generally for giving support and advice.

(b) *Group Meetings*

17.04 Work with groups of planters and breeders continued as in the past. 114 meetings were held with groups on evenings by Extension Officers and were attended by 2,240 planters; over half of such meetings dealt with sugarcane and emphasis was laid on such management practices that call for greater efforts viz rational fertilization, chemical weed control, harvesting at maturity, recruiting and shorter cropping cycle. 10 such meetings were held in collaboration with the Ministry of Cooperatives and Cooperative Development for the benefits of potato and onion growers, members of Cooperative Societies. The other meetings dealt with crops of economic importance with necessary stress laid on aspects of extension priorities viz spacing, pests and diseases control for groundnut, fertilisation and pruning for tea, control of pests and diseases on tomato, spacing, fertilisation and adoption of hybrids for maize, pest control on cucurbits, garlic, ginger and pineapple.

17.05 In the livestock sector 22 meetings were held on evenings and were attended by over 600 professional breeders; the topics discussed were on important aspects of cow keeping e.g. proper feeding and housing, calf management, etc.: rabbit, poultry and goat rearing were also the subject of some meetings.

17.06 Moreover 10 special talks with an attendance of 400 participants on subjects of agricultural interest were delivered on request to several organisations e.g. National Federation of Young Farmers, Rural Development Unit, Mauritius College of the Air, Private Colleges and other clubs.

17.07 At the end of the year, the Division assisted in the programming of a series of seminars intended for leaders of Cooperative Societies on request of the Federation; 3 such seminars were held, with about 225 participants, during which the Scientific Officer (Agronomy) of the Division delivered 3 talks on the subject of chemical weed control in relation to sugarcane.

(c) *Conducted Tours*

17.08 Taking planters to places of agricultural interest taking advantage of the four vans in the Division continued to be part of the overall Extension strategy. 8 tours were organised during the year whereby 240 planters had the opportunity of observing fertiliser and weedicide demonstration plots in sugarcane as well as nurseries of the newly recommended sugarcane variety M 356/53; also visited rice demonstration plots and important onion growing tracts.

(d) *Model Planters*

17.09 23 planters growing various major crops viz sugarcane, maize, potato, onion, tomato, groundnut, and vegetables were selected and were visited at regular intervals by the regional officers. Besides advising, their management operations were followed closely by the officers with a view to establishing model planters in various localities.

(e) *Use of Mass Media*

17.10 A programme of talks on Television for the farming public was prepared and altogether 43 talks were presented by officers of the Division in both Creole and Bhojpuri. Concurrently an equal number of talks were delivered on the Radio in Creole.

Field Demonstration

17.11 Besides fertilisers and pest control, a relatively large number of demonstrations on the use of weedicides was laid in farmers' fields.

17.12 Altogether 33 fertiliser demonstrations were laid on sugarcane, 16 on maize, 16 on onion, 4 on groundnut, 3 on potato, 1 on ginger and 1 on pineapple; 10 weedicides demonstrations were effected on onion, 7 on rice, 3 on sugarcane, and 1 on carrot. Moreover 34 demonstrations were made in relation to the control of pests and diseases on various crops.

Publications

17.13 Through the monthly publication of Farming News, the farming community was kept informed regularly of the latest research findings and recommendations in both the field of crops and livestock. Each issue, printed in 1,750 copies was distributed widely to farmers and interested organisations.

17.14 One issue of 450 copies of the AYC bulletin was made during the year and 4,200 booklets for recording purposes were printed and distributed for use in the Agricultural Youth Clubs (AYC).

17.15 About 3,000 leaflets on fertilisation and weed control aspects of sugarcane management, fruit trees, poultry, onion and rice were printed and distributed as and when required by farmers. In addition 400 copies of 'Guide de Culture Potagère', 'Guide de Culture Potagère et Vivrière' and 'Our Environment—Mauritius' were issued to the farming public.

Permanent Demonstration Centres and Extension Office

17.16 The four permanent Demonstration Centres functioning as regional centres provide accommodation for the increasing activities of the Division.

17.17 Recommended sugarcane varieties e.g. S 17, M 438/59, M 124/59, M 351/57 as well as the latest released variety M 356/53 were grown for demonstration purposes and in cases provided planting materials for interested planters.

17.18 New varieties of tomato (Saturn and Venus), cabbage, petsai, sweet potatoes, ribbed gourd, maize hybrids, potato (Mariline), water melon, asparagus were cultivated in demonstration plots at the centres. Onion, potato, beans and tomato were also grown in comparative demonstrations. Besides, other crops were grown in the appropriate seasons in demonstration of good management practices.

17.19 A model kitchen garden was started at each centre during the year and silk worm rearing from Mulberry plantations grown continued at three centres.

17.20 Planters continued to avail themselves of sweet potato vines, suckers of banana and pine apple, rice seeds and fruit plants from the centres.

17.21 A unit of several classes of livestock viz cattle, goat, poultry and rabbit were kept at each centre.

17.22 Over 75 goat services were effected at the centres for the benefit of goat breeders of the vicinity in view of improving their stock. Moreover, several breeders brought their rabbits (does) for services on the centres.

17.23 To suit the convenience of breeders, arrangement was made with the Government Livestock Feed Factory, for supply of cowfeed in bags of 15 kgs instead of 50 kgs and consequently the sale of cowfeed from the centres increased considerably.

17.24 The four centres as well as the other seven Extension Officers were kept open on three afternoons weekly to receive request for advice from farmers. Calls from planters spiralled up during the year, partly attributed to the issue of maize and bean seed permits.

Demonstration Centre, Mapou

17.25 2,153 kgs of foodstuff, 1½ tons of sugarcane, 1,790 litres of milk, 2,825 eggs and 2 rabbits were produced and sold on the centre, also sold were 9 goats and over 3 tons of livestock feed to breeders. Total sales amounted to Rs 9,064.

Demonstration Centre, Rivière des Anguilles

17.26 1,830 kgs of foodstuff, 2,127 eggs, 8 rabbits, 1½ tons of canes, 1,083 litres of milk were produced for sale. About 13 tons of livestock feed (mainly cow and poultry feeds), 113 kgs of seeds, 109 fruit plants were also sold. Total sales amounted to Rs 21,500.

Demonstration Centre, Plaisance

17.27 1,190 kgs of foodstuff, 2,108 eggs, 4 rabbits, 263 litres of milk, about 2 tons of canes were produced for sale. About 11 tons of livestock feed, 9 fruit plants, 18 hens, 50 kgs of seeds were also sold. Total sales amounted to Rs 16,630.

Demonstration Centre, Centre de Flacq

17.28 3,475 kgs of foodstuff, 14 rabbits, 547 litres of milk, 1,501 eggs, were produced for sale. About 14 tons of livestock feeds, 12 hens, 2,595 kgs of seeds (mainly rice seeds), 68 fruit plants and 14 goats were also sold. Total sale amounted to Rs 22,826.

Propagation and Distribution of Sugarcane Varieties

17.29 Currently recommended varieties e.g. S17, M438/59, M124/59 were grown on the Demonstration Centres.

17.30 The first distribution of planting materials of variety M356/53 was made during the second half of the year; the officers of the Division help in the information campaign and assisted in the distribution of canes of that variety to small planters. Altogether 2,286 "gaulettes" of standing canes of M356/53 was sold to 97 small planters.

17.31 Materials of the variety was also planted on the four Demonstration Centres.

Assistance to Farmers

17.32 Soil samples were taken on sugarcane fields belonging to 117 small planters before replantation; after analysis the results were interpreted and advice on fertiliser application was accordingly tendered to the planters.

17.33 34 Jumna Pari and Anglo-Nubian crosses were sold to goat breeders to improve their stock.

17.34 The rice thrasher was lent to several rice planters on request.

Foodcrops

17.35 The drought period at the end of the preceding year and the occurrence of Cyclone *Gervaise* lowered foodcrop yields considerably in 1975—besides directly inflicting damage to standing crops, the cyclone also delayed planting.

17.36 Nevertheless only a slight decrease in estimated acreages under foodcrops was registered, although as expected, overall production fell considerably (of the order of 20 per cent).

17.37 Cropping in cane interlines showed some increase; the total effective acreage under foodcrops was estimated at 9,602 arpents out of which 1,814 arpents of pure stand equivalent were intercultivated in sugarcane lands.

17.38 The main crops in sugarcane interlines were the following with their respective gross acreages:

		arpents
Potato	...	2,667
Groundnut	...	454
Maize	...	317
Bean	...	289
Tomato	...	141

Creepers and peas also occupied substantial acreages in sugarcane lands.

17.39 Potato was grown over 1,482 arpents comprising 1,210 arpents of pure stand equivalent intercropped in sugarcane lands. The total production was estimated at 9,518 metric tons and the average yield per arpent was 6.4 metric tons.

17.40 The acreage under groundnut was 859 arpents comprising 209 arpents intercropped in sugarcane lands. The total production was estimated at 1,270 metric tons and the average yield of fresh nuts per arpent fell to 1,478 kgs.

17.41 Pests and Diseases

Sugarcane—A few cases of borer's attack were met coinciding with drought period at the end of the year; no outbreak of Gummosis was observed.

Potato—Leaf roll disease was observed to occur to a severe extent (about 30 per cent) in several plantations and the cause was traced to some lots of imported Up-to-date seed. The attention of the Agricultural Marketing Board was drawn to the matter accordingly.

Soft rot occurred to a considerable extent in the variety Mariline—a newly released variety which has given disappointing results.

Groundnut—Cercospora leaf spot disease and Leaf Tiers insects continued to present problems on this crop; nevertheless progress was noted on the adoption of appropriate control measures by planters.

Onion and Garlic—Blast and Purple Blotch occurred to a moderate extent whilst Pink Root Rot continued to take its usual toll in onion growing areas.

Tomato—Regular spraying against Blight has become a routine preventive measure. Fruit flies and borers were also kept under good control.

Pineapple—The Mealy Bug continued to be the most important pest on this crop against which insecticides were often ineffective.

17.42 The Natal Fruit Fly continued to pose the biggest problem on fruit trees.

17.43 Some resurgence of the Rhinoceros Beetle on coconut palms was reported on coastal areas in Flacq district.

Work with Youth

17.44 The work with the Agricultural Youth Clubs comprised, as in the past, formation of new clubs, training of clubs, leaders, importing agricultural education and organising agricultural competitions supplemented by cultural activities.

17.45 At the end of the year the number of Agricultural Youth Clubs was 95.

17.46 Altogether 248 meetings were held with these clubs and 8 tours were organised during which club members were taken to places of agricultural interest.

17.47 A 3 days training course on basic agriculture was held with a participation of 46 clubs.

17.48 One Kitchen Garden Competition was also held wherein 650 members participated from 38 clubs.

17.49 One Rabbit Raising Competition was organised with the participation of 230 members from 16 clubs only—mainly rabbit hutches were damaged during the cyclone.

17.50 A football tournament was also organised wherein 35 clubs participated, besides one Volleyball tournament for the girls' clubs.

17.51 Prizes were awarded to winners of the various competitions held during functions which took place at the four Demonstration Centres and Reduit respectively.

17.52 The two Federations of AYCs, namely that of Grand Port and that of Savanne districts functioned smoothly whereas that grouping the clubs in Moka and Flacq districts fell into inactivity with the departure of two of its leaders. Attempts made to federate clubs in Plaines Wilhems and Black River districts as well as those in the North of the island have met with little success.

Miscellaneous Activities

17.53 The passage of cyclone 'Gervaise' rendered impossible the continuation of the Foliar Diagnosis Survey in sugarcane, started in 1974, however with the preliminary results obtained (An. Rep. Extension Service—1974), a paper was prepared and published in the "Revue Agricole et Technologie Sucrière".

17.54 Upon request, several articles on agricultural topics were prepared for publication by the National Federation of Young Farmers.

17.55 The 22 Secondary Colleges, participating in the Agricultural Project sponsored by the Mauritius College of the Air, were visited regularly by two Senior Technical Officers of the Division.

17.56 Two officers also helped the SILWF Committee in running two Kitchen Garden Competitions.

17.57 The Youth Week Celebration, under the auspices of the Ministry of Youth and Sports, were held at the Demonstration Centres of Plaisance and Rivière des Anguilles; on that occasion two talks on fruit tree growing were delivered by the regional Extension officers.

17.58 A large number of requests for advice from schools and other institutions were entertained; issues of vegetable seeds, and spraying demonstrations were thereby necessitated and effected accordingly.

Liaison with Agricultural Research Institutions

17.59 Close liaison was kept with Research Divisions of the Ministry, Sugar Industry Research Institute and other related institutions with reference to field problefs and new findings in agriculture.

17.60 The following talks at the Mauritius Sugar Industry Research Institute were attended by the officers of the Division:

Date	*Subject*
13th and 27th May	" Revue des Travaux du MSIRI en 1974 "
24th June ...	" Resultats preliminaires des essais sur la maturation de la canne à sucre "
22nd July ...	" Coup d'œil sur la fertilisation de la canne à sucre "
16th September ...	" Les maladies du maïs "
4th November ...	" Utilisation des herbicides dans les cultures vivrières—Resultats preliminaires "
16th December ...	" Variétés de canne à sucre pour la grande culture "

Surveys

17.61 Routine surveys undertaken by the Division were the following:

(i) Weekly recording of market prices for vegetables

(ii) Assessment of food production

(iii) Survey of area under potato and onion and their production for the Agricultural Marketing Board

(iv) Assessment of herbicide damage on foodcrops

(v) Investigation of fodder problems

(vi) Assessment of milk production of New Zealand cows distributed to cowkeepers.

17.62 After the passage of cyclone 'Gervaise' a survey of crop damaged by the cyclone was made.

17.63 With the posting of some samplers from the Arbitration and Control Board in the intercrop season to the Division, a survey on sugarcane planting material used by planters was initiated. Out of the 83 plantations surveyed, only about 5 per cent of the planters obtained cuttings from the Sugar Planters Nursery, Pointe aux Sables while about 77 per cent were found to reply on their own field or neighbouring fields for supply of planting materials. Moreover planting of unsuitable setts (diseased or insect infested, etc.) were found to be of the order of 18 per cent. 55 per cent of the planters adopted the practice of sett treatment before planting.

Staff

17.64 The Division underwent considerable changes caused by staff movement, duirng the year. The Divisional Scientific Officer went on overseas leave as from July to December and the Scientific Officer (Agronomy) was called to act in his stead. The two Agricultural Superintendents of the Division went on mission to Rodrigues Island for a period of one week.

17.65 In the cadre of Senior Technical Officers, one officer left the service; two others have gone away on prolonged leave. Three Technical Officers of the Livestock Section went overseas for a study period of 3 months.

17.66 One Technical Officer in the crop sector left for studies abroad, three others were appointed as Scientific Officers and were transferred from the Division. Moreover two Technical Officers were transferred to other Divisions (one of them in Rodrigues Island).

17.67 11 new Technical Officers were posted and were deployed in the field—8 in the crop sector and 3 in the livestock sector.

17.68 In the grade of Field Assistant, three were sent by the Ministry to follow a three-year Diploma Course in Agriculture on scholarship to the University of Mauritius and one Field Assistant was transferred to the Extension Services by way of replacement.

Foodcrops

The following tables were prepared from data collected by the Division:

Crop	*Area Harvested (ARP)*		*Estimated Average Yield (Kgs/Arpent)*		*Estimated Total Commercial Production (Metric Tons)*	
	1974	*1975*	*1974*	*1975*	*1974*	*1975*
Maize	1615	1232	1043	970	1684	1195
Manioc	40	28	6775	7536	271	211
Arouille	72	26	4917	3731	354	97
Sweet Potatoes ...	14	22	5928	5318	83	117
Groundnut ...	887	859	1742*	1478*	1545*	1270*
Irish potato ...	1277	1482	7247	6422	9254	9518
Beans and Peas ...	510	663	1490	1457	760	966
Pine Apple ...	217	96	4866	5031	1056	483
Brinjal	148	132	6399	5621	947	742
Tomatoes	1259	1493	5333	4033	6715	6021
Ginger	221	120	8090	6250	1788	750
Creepers	667	996	6766	5858	4513	5835
Mixed Vegetable ...	1451	1315	6179	6135	8966	8067
Banana	906	894	9632	4141	8727	3702
Rice	404	244	1653	2032	668	496
TOTAL ...	9688	9602	—	—	47331	39470

The acreages shown above were effective acreages harvested and include the aggregate acreages of different crops grown on the same land in one year as well as foodcrops interplanted with sugarcane.

*Fresh weight.

XVIII. Animal Health Division

HEAD OF DIVISION: M. M. MOSAHEB, PRINCIPAL VETERINARY OFFICER

ARTIFICIAL INSEMINATION AND VETERINARY AID SERVICES

18.01 The activities of the Division of Veterinary Services comprise: performing artificial insemination, providing veterinary aids to cowkeepers, looking after the health of livestock at all Government stations, carrying out tuberculin tests on herd cattle at Government stations and sugar estates, quarantining both large and small animals, preparation of poultry vaccines and carrying out post mortem examinations and diagnostic works at the Animal Health Laboratory, issuing import permits and enforcing the Animal Disease Ordinance.

18.02 The total number of artificial inseminations performed during the year 1975 amounts to 9,017, out of which 698 were performed on Sundays and public holidays.

18.03 Both Friesian and Creole semen from bulls at the Artificial Insemination Centre were used. Charolais frozen semen was used on Ongole cows at the Palmar Livestock Breeding Station. The average conception rate with both Creole and Friesian semen from the Artificial Insemination Centre was 57.8 per cent.

ANIMAL HEALTH

18.04 Infectious Keratoconjunctivitis was observed in New Zealand animals at the Palmar Livestock Breeding Station and mass treatment of all affected animals was carried out. Since the disease is transmitted by flies, measures were taken to reduce the fly population through regular fogging and spraying. No new animal diseases were recorded among large animals, neither on the stations nor in the field.

18.05 Tuberculin tests were carried out on sugar estates' herds and a total of 1,617 animals were tested, out of which 42 reacted to the test, giving a percentage of 2.6 per cent. These animals were usually disposed of through slaughter.

18.06 The field officers of the division attended to the following cases:

Mineral deficiencies	...	1,075
Affections of the udder	...	659
Difficult calvings	...	850
Digestive disorders	...	1,129

ANIMAL HEALTH LABORATORY

18.07 During the year, a total of 2,821 specimens were submitted to the laboratory. These specimens were subjected to pathological, bacteriological, parasitological and haematological examinations.

18.08 These included live animals, animal carcases, blood, milk, water, faecal samples and skin scrapings and were submitted by Government livestock breeding stations, private owners and Police authorities. of the above, 1,697 specimens were brought by members of the public, 665 by Government centres and 75 by Police authorities.

18.09 In addition, 384 specimens, including raw hide articles, stuffed animals and animal skins, were submitted to the laboratory where they were sterilized prior to release.

Vaccine Production

18.10 The following represent the number of doses of each of the vaccines produced at the Animal Laboratory and sold during the year 1975:

Type	*Doses*	
	Produced	*Sold*
Newcastle disease vaccine (live) ...	152,075	138,446
Fowl pox vaccine	180,000	182,395*

Animal Quarantine Service

18.11 To ensure against the introduction of infectious/contagious diseases into Mauritius, the provisions of the Animal Diseases Ordinance were rigidly applied to all imports of livestock and livestock products. The quarantine kennels, the catteries, both at Reduit and the Mauritius Society for the Prevention of Cruelty to Animals (MSPCA) Rose Hill, the Poultry Quarantine Unit at Reduit and the Animal Quarantine Station at Roche Bois were maintained.

18.12 To ensure against the introduction of any diseases through the importation of live goats and sheep from Australia, the slaughter of these animals was restricted to the slaughter houses at Roche Bois, Curepipe and Rose-Hill which are under the control of fully qualified veterinary surgeons. No cattle for slaugher from Madagascar was imported during the year.

Livestock and Livestock Products

A. *Livestock*

18.13 Under the provisions of the Animal Disease Ordinance, 25 ships and 41 aircraft carrying livestock, were cleared by the staff of the Veterinary Services and all livestock, whether for slaughter or breeding purposes, were subjected to quarantine at the quarantine stations. During the year, the following stock were received at the quarantine station at Roche Bois:

Country of Origin	*Bullocks*	*Sheep*	*Goats*
Rodrigues	6	—	08
Australia	—	1,836	246

*Balance brought forward from 1974.

18.14 In addition, 142 cage birds from different countries were held in quarantine prior to release to importers. At Reduit and the MSPCA, Rose-Hill, 12 dogs and 1 cat, imported from various countries, were held in quarantine for a period of six months from the date of arrival. Further, 10,565 day-old chicks from the United Kingdom, 11,637 from Canada, 3,300 from Holland, 14,530 from Western Germany and 500 day-old turkeys from the United Kingdom were also imported during the year.

B. *Livestock Products*

18.15 During the year 1,695 import and 408 landing permits were issued. All frozen meat landed was subjected to veterinary inspection prior to release for sale. The following table summarises the import of livestock products including frozen meat, offals, by-products of abattoirs and prepared livestock feed:

Livestock Product	*Quantity (kgs)*
Frozen beef and beef products	3,449,193
Frozen mutton and offals and preparations ...	1,581,457
Frozen goat meat and offals	122,741
Frozen pork and pork products	391,892
Frozen poultry	47,719
Frozen turkeys and ducks	11,485
Livestock feed (poultry, pig, dog, rabbit, horse, pheasant and duck)	17,825,578

Slaughter Data

18.16 During the year, 1,794 calves, 226 cows (slaughtered on humane ground) and 2,786 bulls of the milch breed were slaughtered, producing 565,845 kgs of beef. In addition, 1,221 head of herd cattle and 1,069 bullocks, imported from Rodrigues were slaughtered, yielding 278,429 kgs of beef. 436 bullocks imported from Madagascar in 1974, were slaughtered and produced 53,516 kgs of beef.

18.17 Likewise, 16,847 kgs of mutton and 32,617 kgs of goat meat were produced in Mauritius and another 55,579 kgs from 2,486 imported goats and sheep giving a total of 105,043 kgs. 667,125 kgs of pork were produced in the country, including pigs imported from Rodrigues. In these figures, offals and preparations are not included.

18.18 The slaughter houses return revealed the following average carcass weight of imported and local cattle slaughtered during the year:

Local herd cattle	107 kgs
Local milch cow	118 kgs
Local bulls of the milch breed ...	129 kgs
Calves of the local milch breed ...	114 kgs
Rodrigues cattle	111 kgs
Madagascar cattle	109 kgs

18.19 During the same period, 331 permits were issued for the slaughter of bulls of the milch breed for religious (Eid-El-Doha, Muslim Festival) ceremonies. During the year, one butcher was licensed to sell beef in meat shop licensed by the Ministry of Health.

Slaughter Houses Control

18.20 During the year, 14 cases of illegal slaughter (including 3 goats, 1 heifer, 4 cows and 5 bulls of the local milch breed and 1 stag) were examined and certificates issued to the Police authorities.

18.21 Likewise, 26 cases of alleged cruelty to animals and 6 accident cases were examined and certificates issued to the Police.

18.22 From the Meat Inspection returns, 1 total and 27 partial seizures on account of bovine tuberculosis were reported among the Madagascar bullocks slaughtered at Roche Bois, Rose-Hill and Curepipe slaughter houses, giving 6.4 per cent of tuberculosis cases among a total of 436 head slaughtered during the year.

18.23 In respect of the local stock of Zebu and milch animals, 11 seizures on account of bovine tuberculosis were reported, giving 0.16 per cent of tuberculosis cases among the total of 6.535 head slaughtered during the year.

Advisory Services

18.24 Officers of the division continued to visit large and small livestock breeders for on-the-spot advice and lectures delivered to the Young Farmers.

Staff

18.25 The Principal Veterinary Officer was sent by the Ministry to visit the Royal Agricultural Show in England and to attend the Conference on Environment held in Edinburgh in July, 1975.

18.26 Veterinary Officer R. C. S. Fokeer went on study leave to Edinburgh in September and Veterinary Officer Z. Heetun went to Paris to follow a course on Meat Hygiene in October.

18.27 Three Temporary Veterinary Officers, namely R. Deenoo, H. Jhoree and J. Maudarbaccus, Technical Officer Y. Boodhoo and Technical Assistant S. Ramgoolam joined the Division.

18.28 Technical Officer, Messrs M. I. Dossa and H. C. Ah Lan left the Division, the former on transfer as Scientific Officer (Plant Pathology), the latter has resigned.

18.29 REVENUE

Veterinary fees	...	20,395.00
Sale of vaccines	...	17,360.53
Quarantine fees	...	10,648.02
Advance a/c Dogs	...	4,960.17
Sale of Milk	...	1,135.40
Import permits fees	...	1,767.00
Miscellaneous	...	1,641.25
Lease of cows	...	760.51
Sale of drugs	...	10,441.01
TOTAL	...	69,108.89

XIX. Projects Implementation Division

HEAD OF DIVISION: MR. *K.* RAMDAURSINGH, TEMPORARY DIVISIONAL SCIENTIFIC OFFICER

NORTHERN PLAINS IRRIGATION PILOT PROJECT 1957

19.01 The Northern Plains Irrigation Pilot Project Water User's Co-operative Society held 4 meetings of the Executive Committee and 2 General Assembly meetings—one for the election of office bearers on the Executive Committee for the year 1975, and the other to determine the cost of irrigation.

VISITS OF OFFICIALS

19.02 The following personalities and representatives have visited the project:

(i) Mr. John Birt, Representative of U.N.D.P.

(ii) Members of the French Economic Mission.

(iii) E.D.F. Economist Mr. Theodore Gros Jean.

(iv) Members and Delegates of the Commonwealth Youth Movements.

(v) Miss Van Thuy from I.L.O.

(vi) Member of the Chinese Mission from the Peoples' Republic of China (Rice Experts).

(vii) Delegates of the Goodwill Mission from Gilbert Islands in the Pacific.

(viii) Members of Overseas Development Ministry (U.K.).

(ix) Mr. Roy Smith, Overseas Sales Manager, Wright Rain.

(x) Dr. Berwick, Agro-meteorology Expert.

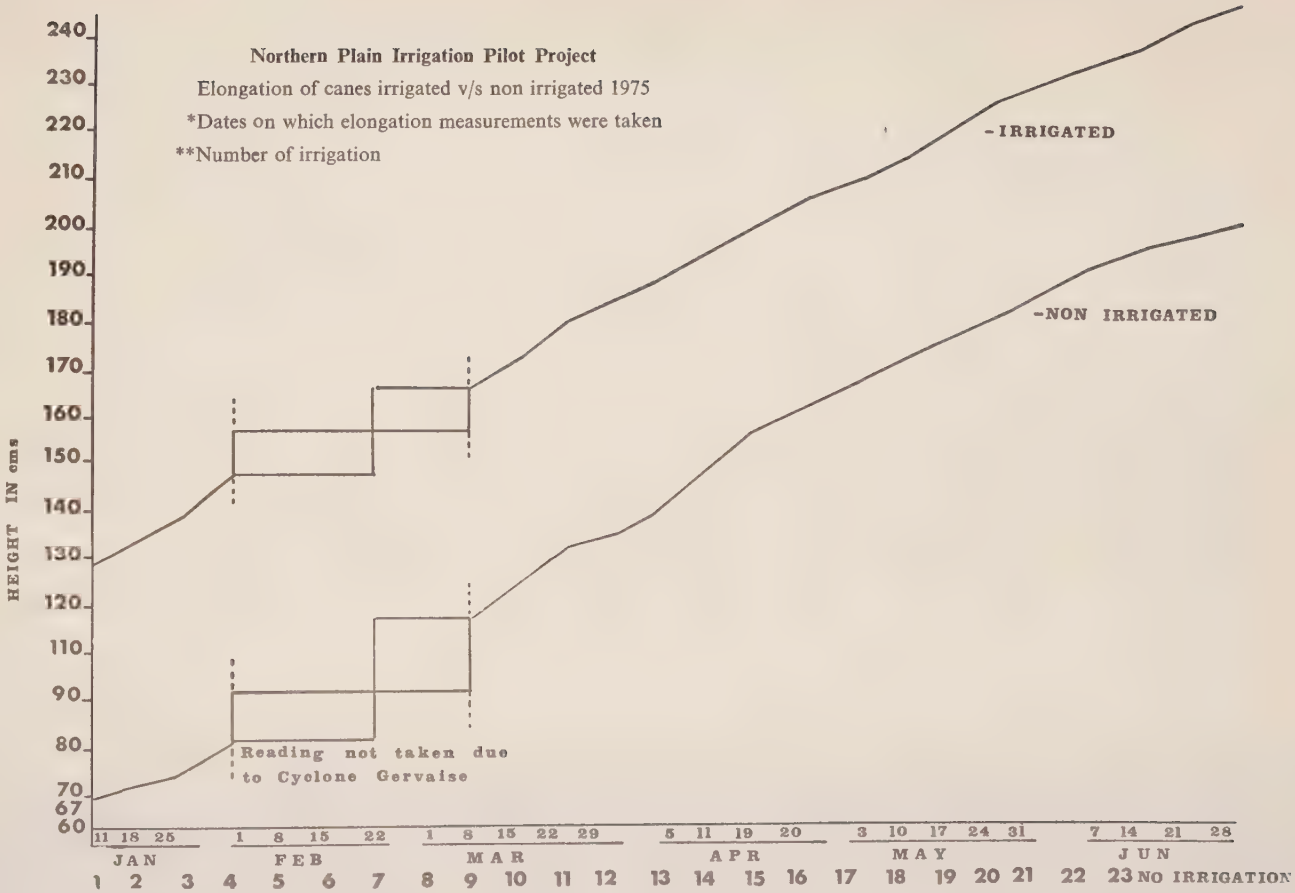
(xi) Delegates from Sugar Syndicate, India.

Extension of Work on the Main Pipeline

19.03 The contract for extending the main line by 350 ft. in the Eastern Sector in order to obviate bursts occasioned by the use of three right angled bends was given to the Development Works Corporation. Due to unforeseen circumstances and lack of certain steel connection items manufactured locally, work has been delayed unduly. Only 186 ft. of 10″ asbestos cement pipes have been laid by Development Works Corporation. A request from the Development Works Corporation to increase the price of the contract due to increase in wages from Rs 5,000 to Rs 11,000 was turned down by the Ministry and accordingly the Projects Division undertook the completion of the work. This extension allowed an additional 10 arpents, belonging to small planters to be irrigated.

Irrigation Sequence and Rainfall

19.04 Sixteen irrigations on a cycle varying from 10-13 days were carried out.


Northern Plain Irrigation Pilot Project
Elongation of canes irrigated v/s non irrigated 1975
*Dates on which elongation measurements were taken
**Number of irrigation
-IRRIGATED
-NON IRRIGATED
HEIGHT IN cms
240
230
220
210
200
190
180
170
160
150
140
130
120
110
90
80
70
67
60
Reading not taken due to Cyclone Gervaise
11 18 25
1 8 15 22
1 8 15 22 29
5 11 19 20
3 10 17 24 31
7 14 21 28
JAN
FEB
MAR
APR
MAY
JUN
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 NO IRRIGATION

On 8 occasions rainfall recorded in this Sector has been more that 1" as per the following dates: 6th February 1975, 11th March, 16th and 17th March, 2nd April, 6th May, 25th May and 21st December. After rainfall, irrigation operations were usually stopped for a period varying from 3 to 4 days, depending on its intensity. However, after the passage of cyclone *Gervaise* in February 1975, no irrigation was possible for 1 month owing to power cut.

Experiment on Elongation of Sugarcane

19.05 From the readings which have been taken for the two years since the Irrigation Project was set up, it is observed that the benefit of irrigation is more pronounced for the period post harvest till January. After this period, the rate of elongation of canes is comparatively less. From harvest time to January it is reckoned that irrigated fields have advanced by 62 cms. over non irrigated canes but from January onwards the rate of growth of both irrigated and non irrigated canes maintained at the same pace.

19.06 The average yield of sugar cane declined in 1975 to 32.2 metric tons from 39.1 in 1974. The reduction accounted for the bad effects of the cyclone *Gervaise* which visited Mauritius in February.

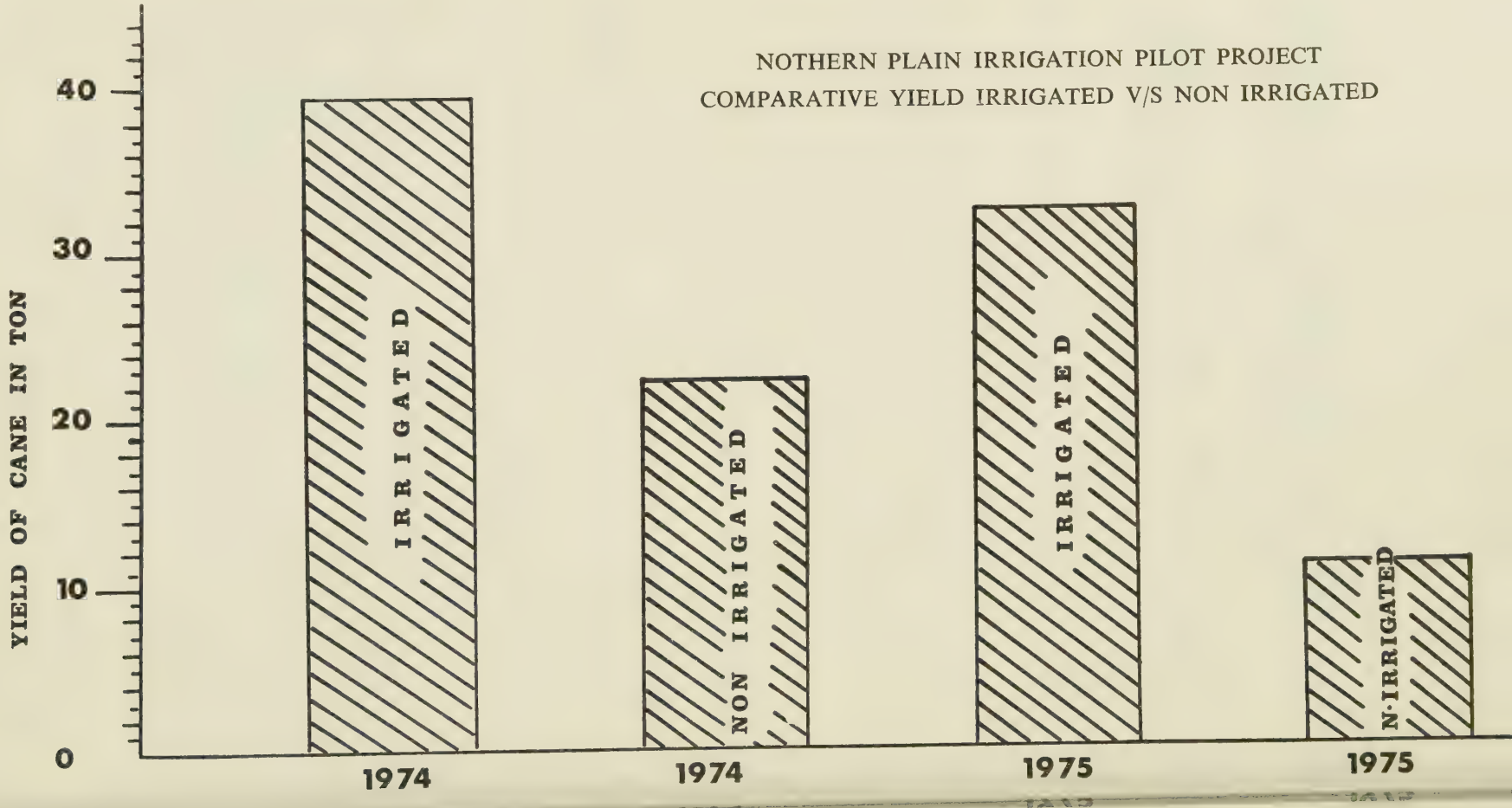
19.07 Neither of these two years could be considered as a normal year. The Pilot Project became operational in October 1973 and therefore irrigation performance for the crop year 1973-74 was uneven as the fields harvested between July—September did not receive their requirement in water. On the other hand the crop year 1974-75 was affected by the cyclone *Gervaise*. Nevertheless the increase in yield recorded at Pilot Project and outside the project (non-irrigated areas) was considered quite significant, about 19 and 20 metric tons in 1974 and 1975 respectively.

Agricultural Diversification

19.08

Crop	*Acreage*	*Acreage yield/Arpent*
Potato ...	... 18A50 (Interline)	4 tons
Tomato	... 25A (Pure Stand)	5 tons
Tobacco	... 4A (Pure Stand)	0.8 tons (dry)
Ground Nut	... 2A35 (Interline)	1.0 tons
*Mixed crops	... 4A	

* Mixed crops include Brinjals, Chillies, Bitter gourd (Margoze,) Cauliflowers and Lady Fingers, etc.


NOTHERN PLAIN IRRIGATION PILOT PROJECT
COMPARATIVE YIELD IRRIGATED V/S NON IRRIGATED
YIELD OF CANE IN TON
40
30
20
10
0
IRRIGATED
NON IRRIGATED
IRRIGATED
N·IRRIGATED
1974
1974
1975
1975

Northern Plains Irrigation Project

19.09 *Phasing*

In an effort to meet the production target of 800,000 tons of sugar by 1980 and to increase foodcrops and livestock production with a view to ease off the pressure of demand on food, the Government gave high priority to this project and considered that it should be completed in three years, instead of five as proposed by Huntings. Thus it was envisaged to complete the stage I on the project in one year. It will be recalled that the Northern Plains Irrigation Project covers an area of 13,000 arpents and the irrigation of this area is envisaged in 3 stages. The first stage which covers the Triolet region would irrigate 4,345 arpents. The second stage in the Calebasse region covers an area of 6,035 arpents and the third stage would supply irrigation water to 2,655 arpents in the Mont Choisy region.

Implementation of Stage I

19.10 The works under stage I have been divided into six parts namely NP1 to NP6.

(a) NP1

The contract was issued out to Tender, and repair works on La Nicolière Feeder Canal started at the end of September. In December 30 per cent of the works were completed.

(b) NP2

NP2 was issued to Tender and quotations were studied.

(c) NP3 to NP6

These documents were being studied by our Overseas Consultants.

Supervision of Works

19.11 The Northern Plains Irrigation Project Committee agreed that Sir M. Mac Donald & Partners, who prepared the design and documents for the Stage I, be also given the supervision of the works. Accordingly Mr. A. Beadle was then appointed as Resident Engineer to supervise the works. He arrived in Mauritius in October 1975.

Proposals for Stages II and III

19.12 Quotations were asked for the preparation of designs and contract documents for stages II and III.

Cadastral Survey

19.13 A cadastral survey was carried out in collaboration with the Sugar Insurance Board. Its objectives were to identify farmers falling under Stage I of the project and to locate farmers' fields.

Small Scale Irrigation Project

19.14 The objective of the project is to provide irrigation to large as well as small planters falling outside the scope of the two major Irrigation Projects viz. Northern Plains Irrigation Project and the Western Coastal Region Irrigation Project.

Drilling of Small Wells

19.15 During 1975 ten (10) additional requests for the supply of irrigation were received from planters. In all 15 boreholes were drilled, of which 14 were successful.

Setting up of Irrigation Units at L'Esperance Trebuchet

19.16 After four wells had been made operative at Petite Rivière, La Ferme and St. Martin, the Small Scale Irrigation Project Committee indicated L'Esperance Trebuchet, covering an area of 230 arpents belonging to some 100 planters, to be the next priority area. The planters participating in the scheme, and whose holdings vary from 0.10 to 8.0 arpents were grouped into a Water User's Co-operative Society. Thereafter the Society took over the responsibility of undertaking all works concerned with irrigation—e.g. trench digging, laying of pipes and building of pumphouses.

19.17 Nine (9) pumphouses were completed and the construction of the 10th pumphouse was nearing completion. Of these pumphouses, three were equipped with pumps. They were inaugurated on 24th October 1975 and made operative.

19.18 In all 5 meetings were held with the planters mainly with a view to advising the Society on its administration. Moreover a pump operator from the Northern Plains Irrigation Pilot Project was delegated to this area to train prospective operators.

Proposed Irrigation Scheme

19.19 Some 600 arpents had been identified and found suitable for consideration under Small Scale Irrigation Scheme. The regions were as follows:

Region	*Acreage (in arpents)*
Rivière du Rempart ...	230
Cottage ...	75
Schoenfeld ...	125
Plaisance ...	157
Total ...	587

19.20 The Survey works for Cottage were completed, while those for Rivière du Rempart and Schoenfeld were undertaken.

Donation of Pumps by the Government of India

19.21 The Government of India donated two pumps for the scheme, one of which was to be installed at Sugar Industry Cane Nurseries at Pointe aux Sables.

Western Costal Region Irrigation Project

19.22 During ealier discussions with the EDF mission, it was indicated that the data contained in the FAO/UNDP report were obsolete and that a fresh appraisal of the project was required. Accorrdingly, the EDF appointed a team of Consultants, comprising an Irrigation Engineer, an Agronomist and an Agricultural Economist from the firm Tractionel. The team arrived in Mauritius for a period of three monhts (May—July 1975) and submitted their report in December.

Main Findings

Project Area

19.23 The Western Costal Region Irrigation Project now covers only an area of 16,208 arpents, slightly less than the 16,581 arpents, as envisaged by FAO. This reduction is due to the expansion of industrial zoning developed since 1970 at Pointe aux Sables/Coromandel.

19.24 Under this project, overhead irrigation would be provided for 15,404 arpents of sugar cane and 617 arpents of food crops, whereas the remaining 187 arpents, earmarked for paddy would be under surface irrigation.

Phasing

19.25 The implementation of the project is phased as follows:

	Arpents
1. La Chaumière System	2,194
2. La Ferme System	3,488
3. St. Pierre System	2,896
4. Palma—Beaux Songes System ...	2,941
5. Magenta System	4,689
Total ...	16,208

Land Use

19.26 The existing and proposed land uses in the scheme area are summarized as follows:

	Sugar Cane	*Food-crops*	*Paddy*	*Uncultivated*	*Total*
Existing Acreages ...	12,073	373	15	4,443	16,904
Proposed Scheme acreages ...	16,066	643	195	—	16,904

Economic Rate of Return

19.27 The project has been found to be viable and has an economic rate of return of 13.6%.

XX. Land Use Division

HEAD OF DIVISION: P. OOGARAH, DIVISIONAL SCIENTIFIC OFFICER

20.01 The Land Use Division was set up in 1974 and is responsible for:

(a) Land Use and Soil Conservation

(b) Land Settlements

(c) Technical assistance in the execution of the following projects in the Rural Development Programme of the Ministry of Economic Planning and Development:

(i) Bench-terracing of identified mountain slopes

(ii) Development of fodder areas

(iii) Cow distribution in selected Village Council Areas.

(d) Liaison with the Agricultural Division in Rodrigues.

LAND USE AND SOIL CONSERVATION

20.02 Our aims are:

(1) rational land use

(2) safeguard of good agricultural land.

20.03 Advice on land use and soil conservation was given to other Divisions and to planters as well. Land use implications of applications for subdivision of agricultural land for residential purposes were carefully considered.

LAND SETTLEMENTS

20.04 There are in all fourteen settlements under the control of this Ministry. They are situated at Petit Sable, Grand Sable, Crown Land Belle Vue, Richelieu, Terre Rouge, Palmar, The Vale, La Cave, Plaisance, Papavert, Bee Manique, Buffer Zone and Elysée.

20.05 There are 680 tenants in all the settlements and the number of holdings is 754. The area of each holding varies from 0.25 arpent to 4 arpents. Terre Rouge and Richelieu settlements are supplied with irrigation water.

20.06 Rent collection was satisfactory. However, several cases of non-payment of arrears of rent were referred to the Crown Law Office for necessary action.

20.07 There was one meeting of the Land Settlement Committee. Cases of transfer and the question of rentals were considered.

RURAL DEVELOPMENT AGRICULTURAL PROJECT

20.08 The Rural Development Agricultural Committee set up in 1974 under the chairmanship of the Chief Agricultural Officer met once a month with a view to follow up the progress of work in the rural development projects.

20.09 The bench-terracing work at Salazie was continued. Regular visits were paid to the site to follow the work and tender advice accordingly. The laying out of the terrace was done by the survey unit of the Ministry and the actual construction of the terraces by labour from the Development Works Corporation.

20.10 Owing to lack of stones, the risers were planted with Setaria grass for stabilization purposes. The grass established quickly and provided satisfactory protection to the riser.

20.11 Mr. D. Bavard, Soil Conservation Expert, recruited under French Technical Assistance in April 1974 provided technical advice on the bench-terracing project at Salazie. He left Mauritius in June 1975 after termination of his assignment.

20.12 Terracing of some eleven acres at Salazie was completed by the end of the year. The bench-terracing project could not progress further owing to the scarcity of unused Crown Lands requiring bench-terracing as a major land improvement.

20.13 The following fodder areas were developed:

D'Epinay	...	...	4 acres
Cap Malheureux		...	4 acres
L'Escalier	...	...	9 acres
Petit Raffray	...	...	4 acres
R. des Créoles	...	...	7 acres

20.14 At Albion, work on Fodder development (mainly *Leucaena leucocephala*) was stopped owing to stray goats damaging the young plants.

20.15 This Ministry delivered 24 cows and 24 bull calves to the Rural Development Unit in August 1973 for distribution to 24 cowkeepers at Carol Village. The cowkeepers were grouped in a Cooperative Society known as the Nandini Co-operative Society. One cow and one bull calf were given to each member of the co-operative society. The Livestock Extension Officer and the Livestock Assistant paid regular visits to Carol Village and worked in close collaboration with the Village Developmet Officer of the locality.

20.16 During the year, two cows died, one of which during cyclone *Gervaise*. The main problem in Carol was the failure of some cows to conceive and owners of these cows wished the replacement of their cow. It was decided by the Rural Development Agricultural Committee that all the cows at Carol, except two, would be taken back by the Ministry and the cowkeepers would be given New Zealand cows. The Rural Development Unit would provide building materials to the cowkeepers so that they might build improved cow-sheds on a self-help basis.

20.17 Under the Rural Development Programme, some 220 cows were distributed to selected cowkeepers in the following village council areas. Bon Accueil, Rivière du Rempart, Mahebourg, Rivière des Créoles, Grand Bel-Air, Old Grand Port, Terre Rouge, Calebasses, Petite Julie, Villebague, Petite Rivière, Bambous, Case Noyale, Bel Air, G.R.S.E., Olivia, Mare Tabac, L'Escalier, Plaine Magnien, Trois Boutiques and Petit Raffray.

20.18 Follow up of the cows was ensured by officers of the Livestock Extension Service and of the Animal Health Division. The Livestock Extension Officers advised on animal nutrition mainly and the officers of the Animal Health Division provided artificial insemination facilities and advice on animal health.

20.19 The Divisional Scientific Officer visited Rodrigues Island in May. Planting of maize and onion was in progress. Owing to the recent long drought period, many terraces had not been cropped for some time. Lack of vegetative cover was apparent on hill slopes. Work on bench-terracing and the construction of dams was being continued.

XXI. Engineering Division

Head of Division: A. R. Satar, Principal Agricultural Engineer

21.01 The Division consists of 3 sections:

(i) Farm Machinery

(ii) Farm Buildings

(iii) Soil and Water

21.02 The Farm Machinery Section is responsible for the design of Agricultural equipment, testing imported equipment and carrying out improvements to suit local conditions if necessary and advise other divisions on the choice of equipment. The workshop of this section carries out the servicing, maintenance and repairs of all vehicles and equipments of the Agricultural Services and manufactures structural members for the Farm Building Section and office furniture for the Agricultural Services and instals pumps and piping networks for the Irrigation Section.

21.03 The Farm Building Section is responsible for the design and construction of Farm and office Buildings for the Agricultural Services.

21.04 The Soil and Water Section is responsible for research and design in the field of irrigation, soil and water conservation and drainage. This section has been responsible for the design of irrigation system for the Small Scale Irrigation Scheme. This scheme is involved in providing irrigation facilities to plots of 10-15 acres belonging to small farmers where underground water is available. It is not possible to use surface water on account of the existing laws on Surface Water Rights.

Farm Machinery Section

21.05 The fleet of Vehicles and Equipment of the Agricultural Services consists of the following:

50 Vehicles (jeeps, cars and vans)
14 Lorries
19 Tractors
38 Trailers
53 Lawn Mowers
120 Sprayers
30 Agricultural Implements
10 Pumps
4 Weighbridges.

21.06 The numbers of servicing, maintenance and repairs were as follows:

Vehicles	863
Tractors	143
Trailers	46
Lawn Mowers ...	76
Sprayers	65
Pumps	35
Agricultural Implements ...	40
Other Minor Works ...	266

21.07 An improved version of the cane chipper has been developed. It consists of a larger fly wheel and the capacity of the blower has been increased so as to deliver the chipped cane directly into a trailer. The thickness of the housing has been increased from $\frac{1}{8}$" to $\frac{1}{4}$" to ensure a longer life. The blades are now held by 3 bolts instead of two.

21.08 Three submersible pumps were connected to the underground piping system at L'Esperance Trebuchet under the Small Scale Irrigation Scheme. 20 Roof Trusses were manufactured for a garage at Reduit and a shelter for cattle at Palmar.

Farm Building

21.09 Working Drawings for a concrete liquid manure tank and a cattle feedlot were prepared. The liquid manure tank is being used for the disposal of livestock waste from the feeding trials undertaken by the Ministry of Agriculture with the help of the F.A.O./U.N.D.P.

21.10 The new feedlot will be used for another set of experiments on the use of locally available feeds for milk production.

21.11 The following buildings were completed and handed over:

(i) Conversion of the existing office and store into living quarters at Belle Vue Farm to house the Chinese Agricultural Mission.

(ii) Mess Room and Store at Belle Vue Farm.

(iii) Two garages for vehicles at Reduit and an office and Store for the Poultry Breeding Centre at Reduit. The latter is part of the Extension of the Poultry Breeding Centre and will provide 21,000 cu. feet of feed store on the ground floor and 2,100 sq. feet of office accommodation on the 1st floor.

Soil and Water

21.12 The following overhead irrigation systems have been designed for the Small Scale Irrigation Scheme:

10 units (230 acres) at L'Esperance Trebuchet.

7 units (240 acres) at Rivière du Rempart.

3 units (75 acres) at Cottage.

Each unit consists of a borehole, an electric submersible pump, burried Asbestos Cement Main Line Aluminium Portable Laterals and Medium Pressure Sprinklers. One inch of irrigation water is applied per week. The planters are grouped into a Water Users Co-operative which is responsible for operating the unit. Technical advice is provided by the Engineering and Project Divisions.

XXII. Field Services

Head of Division: Mr. S. P. Vythilingum, Agricultural Superintendent

22.01 During most of the year under review the set up of the Division comprised the undermentioned sections until by December 1975 it has changed.

(i) Transport Section

(ii) Livestock Feed Factory

(iii) La Brasserie Fodder Section

(iv) Nouvelle Découverte Station

(v) Reduit Head Quarters Grounds—buildings, workshops and labour coordination

(vi) Le Reduit Canal (Syndic)

(vii) Rodrigues.

22.02 (i) *Transport Section.*

All vehicles of the Ministry are under the control of the Field Services. These cater for the transport of Stores, manure and feedstuffs for the different stations and for Reduit. The fleet comprised 83 vehicles in service during the year under review; 50 are jeeps, cars and Land Rovers, 14 lorries and 19 tractors. Jeeps, Land Rovers and cars were used for conveyance of officers, experts, field staffs and for collection of paysheets and payments of wages and salaries.

22.03 (ii) *Livestock Feed Factory and Rose Hill Extension Shop.*

The tonnage of animal feedstuffs manufactured during the year amounted to 3,094.6 tons. Cyclone *Gervaise* which struck on the 6th February did not do much damage to the factory buildings. There was also no deterioration of the stacked raw materials.

Much difficulty was encountered during the year in the supply of raw materials and their costs were constantly changing. The retail price of the different feeds have been maintained at actual manufacturing costs plus 10% for overhead charges. Their price for July and December 1975 and distribution were as follows:

	Price per ton July 1975	*Price per ton December 1975*	*Total Production Livestock Feed Factory*
	Rs	Rs	Kgs
Chick Feed ...	1,630	1,504	67,435
Poultry Feed ...	1,581	1,414	259,295
Cow Feed ...	987	1,062	2,058,545
Pig Grower Feed ...	1,335	1,356	309,660
Pig Starter Feed ...	1,614	1,369	6,160
Calf Feed ...	1,447	1,646	8,190
Modified Cowfeed ...	1,110	—	94,860
Bull Feed ...	1,150	1,302	52,200
Creep Feed ...	1,832	1,601	20,480
Rabbit Feed ...	1,164	1,360	19,480
Horse Feed ...	1,167	1,216	83,960
Special Horse Feed ...	1,296	1,304	110,245
Mineral Mixture ...	1,465	1,465	4,080
		TOTAL ...	3,094,590

The total revenue from sale of different feeds during the year under review amounted to Rs 769,302.42 of which the sum of Rs 266,368.45 was collected at Rose Hill Extension Shop, for the sale of 188 tons 200 kgs of different kinds of feeds.

22.04 (iii) *La Brasserie Fodder Section*

This section was the former Milk and Meat Project subsequently attached to the Curepipe Experiment Station and then detached. It has an area of 380 arpents of which 270 Arpents planted under fodder, mostly Setaria and was exploited during the year under review. An average of ten tons fodder was provided daily to Curepipe Livestock Breeding Station including Sundays and Public Holidays.

After each fodder cut 50 kgs Sulphate of Ammonia and 25 kgs Muriate of Potash were applied per arpent.

For 30 days a lorry load of fodder of 5 tons was supplied daily to the Prison's Department.

22.05 (iv) *Nouvelle Découverte Station*

This station formerly Rice Project has been in 1975 transformed into Mulberry and Fodder planting station. 4½ Arpents Mulberry and 15 arpents of Setaria have been planted during the year under review.

22.06 (v) *Reduit Grounds—Buildings, Workshops and Labour Co-ordination*

The grounds around the Head Office were maintained throughout the year under review.

Buildings were repaired after cyclone *Gervaise*. A garage blown down by cyclone was erected in concrete blocks and corrugated iron sheet roof of angle iron. Glass panes (of different office buildings especially of green houses broken during cyclone were promptly repaired. Blacksmith Workshop, Carpenters Workshop as well as Main Store Construction were damaged in different degrees by cyclone and this has necessitated the transfer of the main store to its new building.

LABOUR COORDINATION

22.07 The occasional and seasonal labour requirements by the different divisions were centrally co-ordinated.

22.08 (vi) *Le Reduit Canal (Syndic)*

The Riverains of "Le Reduit Canal" have entrusted the management of the Canal on Agricultural Superintendent, Field Services Division and thus have appointed the latter as 1st Syndic and Mr. Marcel Lagesse, as Joint Syndic. Throughout the length of about 25,000 feet mud, broken branches, blown down trees were removed after cyclone *Gervaise*.

A meeting of the Riverains was held after the cyclone. A special organisation has been set up for control of the water flow in the canal, each and every Riverain was made aware of his rights and responsibilities.

22.09 (vii) *Rodrigues.*

This is a new section dealing with problems relating to the agricultural affairs of Rodrigues. The Agricultural Superintendent, Field Services Division acted as Liaison Officer. Regular visits by Technical Officers and Heads of Divisions of the Ministry were made and reports were submitted.

XXIII. Agricultural Division, Rodrigues

OFFICER-IN-CHARGE: J. F. KWET-ON, ACTING AGRICULTURAL SUPERINTENDENT

GENERAL

23.01 Though there was no cyclone in 1975, the drought which had prevailed in 1974 was less severe in 1975. There was more abundant rainfall which was however well below the normal as indicate the figures below:

		Normal for 10 years
Pointe Canon	633.4 mm	1249 mm
Solitude ...	885.8 mm	2008 mm
Lataniers ...	839.8 mm	1492 mm
La Ferme ...	780.5 mm	1543 mm
Oyster Bay	789.2 mm	1396 mm
Port South East	537.3 mm	1154 mm

23.02 Human and Livestock populations still suffered from lack of water, with many springs having already dried out. Crop yields were in general meagre. Most of the population resorted to imported rice as staple food.

The technical staff was reinforced with two new technical officers from Mauritius.

In general, development works proceeded normally.

CAPITAL PROJECTS

Land Development

23.03 Land terracing was carried out on 5 sites, one per agricultural section, each site having one overseer in charge of 250 development workers. In all, 283,914 men-days of labour were employed under this project which can be broken down as follows:

Terracing	1,048,468 ft	255,384 men/days
Main drains	302,474 ft	23,888 ,, ,,
Other Works (including access roads, windbreaks etc.) ...		4,642 ,, ,,
		283,914

The above works cover an area of approximately 425 arpents.

23.04 As from October 1975, after a new registration of Relief Workers, there were in all 1,500 labourers on the terracing sites.

Water Supplies

23.05 The small dam at Bassin Banane springs was completed. Construction of the 50,000 gallon reservoir at Montagne Cabri to store water by gravity from Bassin Banane dam was started. The Rock-filled dams at Anse Raffin and St. Louis were completed, their heights having been reduced so that the masons and labourers could be shifted to a new site.

23.06 At Mourouque a small dam was built from where water will flow by gravity and stored into a 100,000 gallon reservoir lower down. From this reservoir which is already under construction water will be pumped up a head of 900 feet to supply Port Mathurin and the eastern part of the island. Flow of the Mourouque river was measured during the peak drought period at 90 gallons per minute. It is hoped that there will be excess water which will be used for irrigation of the valley.

23.07 A dam 10 feet high with a span of 60 feet, designed by the Central Water Authority Engineer, was built across Rivière Coco Valley. A pumping station to pump water from this dam is being installed to supply La Ferme Village, which was much affected during the last drought. Excess water will be used for irrigation of the valley. The Accacia dam, originally built by the Ministry of Works was damaged beyond repair during cyclone Beatrice. It was completely re-built by the Agricultural Services and is now operative. Silt was removed from 13 dams. Five new 350 foot head capacity pumps were received for replacement of old ones.

23.08 The following new pipe lines have been laid:

3 inch	...	... 6,000 ft
2 inch	...	... 4,000 ft
1 inch	...	... 2,000 ft

Pasture Development

23.09 In view of the creation of feed lots, sugar cane of local variety was planted on one arpent of land at Oyster Bay. The canes will be ready for propagation by May 1976. At Plaine Corail, 225 arpents of "Vielle Fille" were cleared and sowed with Accacia. The germination was very satisfactory. Despite the presence of two watchmen, private sheep and goats did much damage to the seedlings. A stone wall is being erected to keep out the animals.

Re-afforestation

23.10 This capital item is now the responsibility of the Forestry Division. This transfer was accompanied by the transfer of 200 Relief Workers to the above Division.

Nevertheless, the Agricultural Services are still playing an important role in the re-afforestation programme by providing additional labour required at peak planting time, transport and seedilngs. In 1975, the Agricultural Nurseries produced 290,000 assorted forest-tree seedlings.

Extension Service

23.11 Land cultivation was much limited by the drought which seemed conducive to a high incidence of insect pests. Spraying of Dipterex was done free against stem borer caterpillars on 60 arpents of maize belonging to private farmers. Free spraying was also done on farmers' onions against thrips to a lesser extent. The Agricultural Nurseries produced and offered for sale to the Public 11,700 fruit seedlings including lime, mango, bread fruit, grape, jack-fruit, coconut, guava and Letchi.

23.12 Activities of the Agricultural Youth Club's and Young Farmers' Clubs were very much restricted by the drought. Some vegetable seeds and mixed chemical fertilizers were distributed free to the above. Rabbit keeping is gaining popularity. 15 pairs of rabbits were sold to the public from the Marechal rabbitry.

1975

PRODUCTION AND MARKETING

23.13 The following were exported to Mauritius.

Cattle	*Pigs*	*Sheep/Goats*	*Onions*	*Poultry*	*(Salted Fish/ Dried Octopus)*
804 head	1485 head	3305 head	60 tons	478 crates of 48 head	1766 bales of 150 lbs

The approximate values of the exports were:

	Rs
804 head of cattle at Rs 1,200/head	964,800
1495 head of pig at Rs 300/head	445,500
3305 head of sheep/goat at Rs 200/head	661,000
60 tons onions at Rs 1,800/ton	108,000
478 crates of poultry at Rs 600/crate	286,800
1966 bales salted fish/Dried Octopus at Rs 490/bale	865,340
TOTAL ...	3,331,440

1975

ANIMAL STATISTICS

23.14 Balances at 31st December, 1975.

Cattle:

	Adults		*Young*		*Total*
Station	*male*	*female*	*male*	*female*	
Bay Topaz ...	1	11	7	10	39
Maréchal	3	14	8	18	43
St. Gabriel ...	17	38	21	27	103
Batatran	1	11	5	11	28
Oyster Bay ...	2	10	7	11	30
TOTAL ...	24	84	48	77	233

23.15 There were 28 calvings producing 11 male and 17 females calves. Sales of bull calves to farmers were not effected because of lack of fodder due to the drought. Only two adult bulls were sold for breeding purposes. 3 bull calves and 8 heifer calves died.

Pigs:

Station	Adults		Young		Total
	male	female	male	female	
Bay Topaz ...	2	11	1	3	17
Maréchal ...	2	5	5	6	18
St. Gabriel ...	6	19	11	4	40
TOTAL ...	10	35	17	13	75

23.16 There were 34 farrowings producing 231 piglets or 6.7 per litter, with 79.5 per cent survival to weaning age. 347 piglets were sold to farmers.

23.17 *Sheep*:

Station	Adults		Young		Total
	male	female	male	female	
Crab Island	4	69	52	53	178

95 lambs were born. 12 rams and 7 ewes were sold to farmers as breeding stock. There were 17 deaths mainly due to attacks by stray dogs at night. The sheep are no longer left to graze at night.

GOATS

	Adults		Young		Totals
	Male	Female	Male	Female	
St. Gabriel ...	1	15	16	14	46

There were 20 kiddings producing 21 male and 13 female young. 2 male and 2 females died. 11 males and 2 females were sold to farmers.

APPENDIX I

Staff — (as at 31st December, 1975)

Appointment	*Name*	*Remarks*
Permanent Secretary ...	L. Purmessur, B.Sc. Econ. (London)	
Principal Assistant Secretary		Vacant
Chief Agricultural Officer	B. D. N. Roy, B.Sc. (Wales), Dip. Agric. (Mtius)	
Veterinary Adviser ...	Vacant	
Principal Agricultural Officer (2)	K. Lutchmeenaraidoo. B.Sc. Agric. (Reading), Dip. (Mtius)	
	R. J. S. Moutia, D. Phil. (Gauhati) B.Sc. Hort. (London), Dip. Agric. Economics (Oxford), City & Guilds (Sugar Manufacture) 1st Class Cert. (London), Dip. Agric. (Mtius)	On leave. T. M. Narain, Temporary P.A.O.
ADMINISTRATIVE AND FINANCE DIVISIONS		
Administrative Officer (3)	R. M. Hurdowar, B.A (Hons.) East Africa), D.P.A.M. (Mtius)	
	A. I. Oozeerally, D.P.A.M. (Mtius)	
	R. Sumputh, D.P.A.M. (Mtius)	
Principal Finance Officer	S. P. R. D. D. Davay	
Senior Executive Officer		Vacant
In addition there were:	6 Higher Executive Officers	
	14 Executive Officers	
	2 Higher Clerical Officers	
	35 Clerical Officers	
	103 Clerical Assistants	
	1 Senior Stores Officer	Paid from the vote of the Ministry of Finance
	3 Assistant Stores Officers	
	3 Senior Confidential Assistants	
	21 Typists	
	2 Head Office Attendants	
	16 Office Attendants	

APPENDIX I—*continued*

AGRICULTURAL DIVISION

Appointment	*Name*	*Remarks*
Divisional Scientific Officer (Agronomy)	A. L. Owadally, Ph. D. Agric. (Nottingham), B.Sc. (Hons) Agric Botany (Wales), Dip. Agric. (Mtius)	
Scientific Officer (Agronomy)	K. Ramdaursingh, B.Sc (Hons.) Agric. & A. H. (Uttar Pradesh) Dip. Agric. (Mtius)	Temporary Divisional Scientific Officer
	J. R. N. Govinden, B.Sc. (Agric.) (Hons.) (Crop Sciences) Univ. of Ibadan	On leave
	S. N. Naidu, B.Sc. (Hons.) Agric. & Dip. Agric (Mtius)	On leave
	P. P. Vyapoory, B.Sc. (Agric.) & Dip. Agric. (Mtius)	
	H. Rojoa, B.Sc. Agric. (Hons.) (Punjab)	
	C. G. Pallany, B.Sc. (Hons.) Agric. (Mtius)	
Scientific Officer (Horticulture)	I. Rajkomar, B.Sc. (Hons.) Agric. (Udaipur)	
	M. Ramtohul, B.Sc. (Hons.) Agric. & A. H. (Uttar Pradesh)	
	K. F. Lan Chow Wing, Dip. & Degree in Agric. (Mtius)	

ANIMAL PRODUCTION DIVISION

Divisional Scientific Officer (Animal Husbandry)	J. A. C. Delaitre, B.Sc. Agric. (New Zealand)	
Scientific Officer (Animal Husbandry)	B. Hulman, B.Sc. Agric. (Allahabad)	
	G. Naidoo, B.V.Sc. (India)	
	L. K. Mapoon, B.Sc. (Hons.) Agric. (If Nigeria)	
	A. A. Boodoo, B.Sc. (Agric.) (Animal Science) Addis Ababa	
In addition:		
	1 Technical Officer (Agriculture)	

APPENDIX I—*continued*

PLANT PATHOLOGY DIVISION

Appointment	*Name*	*Remarks*
Divisional Scientific Officer (Plant Pathology)	G. M. Lallmahomed, Post graduate Cert. in Nematology (Wageningen), B.Sc. (Hons.), Agric. Biology (Ibadan), Dip. Agric. (Mtius)	
Scientific Officer (Plant Pathology)	J. Bucha, B.Sc. (General) (Auckland)	
	M. Pillay, B.Sc. (Hons.) Botany (Univ. of Delhi)	
Scientific Officer (Plant Pathology)	M. I. Dossa, B.Sc. (Hons.) Microbiology, M.Sc. (Hons.) Microbiology, Aligarh	
In addition there were:		
	3 Technical Officers (Scientific)	
	9 Labaratory Attendants	

AGRICULTURAL CHEMISTRY DIVISION

Divisional Scientific Officer (Agricultural Chemistry)	S. Belcourt, Post graduate Diploma Agric. Sc. (Wales), B.Sc. Agric. Chem. (Wales), Dip. Agric. (Mtius)	
Scientific Officer (Agricultural Chemistry)	L. C. Lam Thuon Mine, B.Sc. Chem. (London)	
	N. N. Ramanjooloo, B.Sc. Hons. Chem. Delhi	
	A. H. Mohungoo, B.Sc. (Hons.) Chem. Aligarh	
In addition there were:		
	3 Technical Officers (Scientific)	
	6 Laboratory Attendants	

DAIRY CHEMISTRY DIVISION

Divisional Scientific Officer (Dairy)	J. E. Pablot, B.Sc. General (London)	
Scientific Officer (Dairy Chemistry)	P. Mardamootoo, M.Sc. Chem., B.Sc. (Hons.) Chemistry (Delhi)	
	J. F. S. Ng Man Sun, B.Sc. (Hons.) Chem. Manchester	
In addition there were:		
	2 Technical Officers (Scientific)	
	2 Field Assistants	
	4 Laboratory Attendants	
	3 Livestock Attendants	

APPENDIX I—*continued*

ENTOMOLOGY DIVISION

Appointment	*Name*	*Remarks*
Divisional Scientific Officer (Entomology)	M. J. L. Monty, B.Sc (Hons.) Entomology (Queensland), Dip. Agric. (Mtius)	
Scientific Officer (Entomology)	A. Joomaye, B.Sc. (Hons.) Zoology & Botany (East Africa)	
	M. Ramsamy, B.Sc. General (London)	
	S. I Balluck, B.Sc. (Zoology), M.Sc. (Zoology), Delhi	
In addition there were:		
	2 Technical Officers (Scientific)	
	1 Field Assistant	
	8 Laboratory Attendants	

EXPERIMENTAL STATIONS

Agricultural Superintendent	S. Y. E. Doomun	
Senior Technical Officer (Agriculture)	A. A. M. Osman, Dip. Agric. (Mtius)	
	A. C. Chan Hing Chong, Dip. Agric. (Mtius)	
	A. C. Gouges, Dip. Agric. (Mtius)	
	I. H. Sassa, Dip. Agric. (Mtius)	
	Y. L. Kong Ting Lun, Dip. Agric. (Mtius)	
	L. C. M. Li Ting Wai, Dip. Agric. (Mtius)	
	F. S. Lam Kee, Dip. Agric. (Mtius)	
In addition there were:		
	10 Technical Officers (Agriculture)	
	6 Field Assistants	
	16 Technical Assistants (Agriculture)	
	6 Agricultural Assistants	
	1 Laboratory Attendant	

APPENDIX I—*continued*

LIVESTOCK BREEDING STATION

Appointment	*Name*	*Remarks*
Agricultural Superintendent	Y. Aumjaud, Dip. Agric. (Mtius)	
Senior Technical Officer (Agriculture)	A. Pooloo, Dip. Agric. (Mtius)	
	M. Govendasamy, Dip. Agric. (Mtius)	
	S. M. Sheik Hussen, M.Sc. Agric. (Kiev)	
In addition there were:		
	3 Technical Officers (Agriculture)	
	2 Field Assistants	
	2 Technical Assistants (Agriculture)	
	Technical Assistant	
	Agricultural Assistant	

EXTENSION SERVICES DIVISION

Divisional Scientific Officer (Agriculture)	L. R. Brunet, Dip. Agric. Ext., (Queensland), B.Sc. Agric. (Reading), Dip. Agric. (Mtius)	
Scientific Officer (Agronomy)	S. P. Mauree, B.Sc. (Agric.) (Madras)	
Agricultural Superintendent	M. Sooltangos, Dip. Agric. (Mtius)	
	J. J. A. Ferrière	
Senior Technical Officer (Agriculture)	J. C. Honglin, Dip. Agric. (Mtius)	
	M. F. Jeerooburkhan, Dip. Agric. (Mtius)	
	M. John Chuan, Dip. Agric. (Mtius)	
	M. Goolamhossen, Dip. Agric. (Mtius)	
	J. C. Appapoulay, Dip. Agric. (Mtius)	
	M. Teeluck, Dip. Agric. (Mtius)	
	R. Gohabar, B.Sc. Agric. (Sind.)	
	Lee Kien Vong, Dip. Agric. (Mtius)	
In addition there were:		
	16 Technical Officers	
	11 Field Assistants	
	4 Agricultural Assistants	
	1 Publicity Assistant	

APPENDIX I—*continued*

Animal Health Division

Appointment	*Name*	*Remarks*
Principal Veterinary Officer	M. F. Mosaheb, M.Sc. Tropical Veterinary Science (Queensland) B.V.Sc. and A.H. (Punjab)	
Veterinary Officer ...	R. C. S. Fokeer, B.V.Sc. &B.Sc. Animal Husbandry (Bombay)	
	S. Z. Heetun, D.V.M. (West Pakistan Agric. University)	
	L. L. Beeharry, B.V.Sc. & A. H. (Uttar Pradesh)	
	D. Sirbartie, B.W.M. (Nairobi)	
Laboratory Technologist	L. H. R. Maurice, Dip. Agric. (Mtius)	
	1 vacancy	
Senior Technical Officer (Livestock)	L. R. Pascal	
	C. A. Adelson	
	M. Bhunnoo, Dip. Agric. (Mtius)	
Senior Technical Officer (Agriculture)	M. Govendasamy, Dip. Agric. (Mtius)	
In addition there were:		
	10 Technical Officers (Livestock)	
	1 Technical Officer (Scientific)	
	22 Technical Assistants (Livestock)	
	6 Laboratory Attendants	

Projects Implementation Division

Divisional Scientific Officer (Agriculture)	T. M. Narain, M.Sc. Agric. Extension (Reading), B..Sc. Agric. (Reading), Dip. Agric. (Mtius)	Temp. P.A.O.
In addition there were:		
	1 Technical Officer (Agriculture	
	1 Serveyor	
	1 Surveyor Assistant	
	2 Junior Draughtsman	1 seconded from Ministry of Housing
	1 Printing Machine Operator	
	1 Field Assistant	

APPENDIX I—*continued*

LAND USE DIVISION

Appointment	*Name*	*Remarks*
Divisional Scientific Officer (Agriculture)	P. Oogarah, B.Sc. (Agric.) Massey, New Zealand, Dip. Agric. (Hons.) (Mtius), Postgraduate Certificate Course in Land Resources Planning (U.K.), Postgraduate Diploma Agric. Eng. (U.K.) M.I. Agric. E.	
Agricultural Superintendent	C. S. Amide, Dip. Agric. (Mtius)	

FIELD SERVICES DIVISION

Senior Agricultural Superintendent	M. I. Fakim Dip. Agric. (Mtius)	
Agricultural Superintendent	S. P. Vythilingum, Dip. Agric. (Mtius)	
In addition there was:		
	1 Technical Assistant (Agriculture)	

ENGINEERING DIVISION

Principal Agricultural Engineer	A. R. Satar, B.Sc. Agric. Engineering (Israel), M.I. Agric. Engineering, Dip. Agric. (Mtius)	
	G. M. Oodally, Dip. Agric. (Mtius)	
Assistant Agricultural Engineer	M. Morad, Dip. Agric. (Mtius)	
In addition there were:	1 Technical Officer (Agriculture)	
	1 Field Assistant	

CANE PLANTERS' AND MILLERS' ARBITRATION AND CONTROL BOARD

General Manager ...	A. A. Aumeerally, Dip. Agric. (Mtius), City & Guilds of London Institute (Sugar Manufacture) B.Sc. Sugar Engineering B.Sc. Chemistry, Engineering (Louisana State Univ. Baton Rouge, U.S.A.)	

APPENDIX I—*continucd*

Appointment	*Name*	*Remarks*
Sugar Technologist ...	I. D. Nawoor, B.Sc. General, B.Sc. (Hons.) Chemistry, Wales	
Accountant ...		Vacant
Assistant Sugar Technologist	A.A. Tin Loi, Dip. Hons. (Agric.) Mtius, B.Sc Hons. Sugar Tech. (Mtius)	
Senior Area Superintendent	P. R. Thelemaque, Dip. Agric. (Mtius)	
Area Superintendent ...	I. Aumeerally, Dip. Agric. (Mtius) City & Guilds of London Institute (Sugar Manufacture)	
		2 Vacancies
Finance Officer ...		Vacant
In addition there were:		
	7 Senior Technical Officers (Sugar)	Vacant
	14 Technical Officers (Sugar)	2 Vacancies
	27 Senior Technical Assistants	1 Vacancy
	42 Technical Assistants	18 Vacancies
	2 Laboratory Attendants	
	Punch Room Supervisor	Vacant
	Punch/Verifier Operator	Vacant
	Telephone Attendant	Vacant
	1 Executive Officer	
	Confidential Assistant	Vacant
	8 Clerical Officers	5 Vacancies
	1 Shorthand Writer—Senior Confidential Assistant	

APPENDIX II

Composition of Principal Boards and Committees

(i) Board of Agriculture, Fisheries and Natural Resources

The Permanent Secretary, Ministry of Agriculture and Natural Resources and the Environment—*Chairman*

The Conservator of Forests—*Vice-Chairman*

The Deputy Financial Secretary

Members of the Legislative Assembly

The Honourable M. Fakira, M.L.A.

The Honourable P. Mewasingh, M.L.A.

The Honourable M. Teeluck, M.L.A.

The Honourable M. Fok Seung, M.L.A.

Representatives of Millers

Mr. Serge Dupont de Rivaltz de St Antoine

Mr. Robert Antoine

Representatives of Planters

Mr. S. Venkatasamy

Mr. L. Jugessur

Representative of the Chamber of Agriculture

Mr. Claude Noël, C.M.G.

(ii) Cane Planters and Millers Arbitration and Control Board

Mr. L. E. Venchard, Q.C.—*Chairman*

Permanent Secretary, Ministry of Agriculture and Natural Resources and the Environment—Representative of the Minister of Agriculture and Natural Resources and the Environment

Mr. Currim Currimjee—Independent Member

Mr. Serge Staub
Mr. Théo Maigrot } Representatives of Millers

Mr. B. Ramphul ... Representative of planters cultivating canes on 30 arpents or more land

Mr L. Mungur ... Representative of planters cultivating canes on less than 30 arpents

Mr. R. Seeruttun ... Representative of planters who are members of cooperative credit societies

APPENDIX II—*continued*

(iii) Tobacco Board

A Principal Agricultural Officer—*Chairman*
The Commissioner of Excise—*Vice-Chairman*
The General Manager of the Board
The General Manager, British American Tobacco (Mauritius) Limited or his representative
The Managing Director, Almagalmated Tobacco Corporation (Mtius) Ltd. or his representative
Mr. M. I. C. Gunness
Mr. A. Georges Rey
Mr. Soomaroo Butan
Mr. Aneerood Purgass
Mr. Oomar Maudarbaccus
Mr. D. Gungadeen
Mr. I. N. Roy
Mr. Beewa Mahadeo

(iv) Land Settlement Committee

The Divisional Scientific Officer (Land Use)—*Chairman*
The Divisional Scientific Officer (Extension)
A representative of the Ministry of Housing, Lands and Town and Country Planning
A representative of the Ministry of Cooperatives and Cooperative Development
Agricultural Superintendent (Field Services)
Mr. S. Venkatasamy, Representative of the Mauritius Cane Growers' Association
Mr. L. Jugessur, Representative of the Mauritius Cooperative Agricultural Federation Ltd.
Honourable M. Teeluck, M.L.A.
Honourable P. Mewasingh, M.L.A.

(v) Tea Control Board *(Restyled Tea Board as from August 1975*

Ex-Officio Members

The Permanent Secretary, Ministry of Agriculture and Natural Resources and the Environment or his representative—*Chairman*
The Financial Secretary or his representative
The Registrar of Cooperative Societies or his representative

Members appointed by the Minister

Mr. A. R. L. Hardy	...	Representative of the Chamber or Agriculture
Mr. L. Ramdin, M.B.E. Mr. L. P. de Maroussem	}	Representatives of Manufacturers
Mr. H. Bheeknah Mr. H. Bissessur	}	Representatives of Planters
Mr. H. R. K. Aubdool Mr. V. Govinden, M.B.E. Mr. D. Gungadeen	}	Three other persons

APPENDIX II—*continued*

(vi) Sugar Millers Development Fund Committee

A representative of the Minister of Agriculture and Natural Resources and the Environment—*Chairman*

A representative of the Minister of Finance

Mr. A. Pierre Dalais

Mr. Cyril Lagesse

Mr. J. L. Edouard Rouillard

Mr. E. P. G. White.

(vii) Sugar Planters Development Fund Committee

A representative of the Minister of Agriculture and Natural Resources and the Environment—*Chairman*

A representative of the Minister of Finance

A representative of the Minister of Cooperatives and Cooperative Development

A representative of the Minister of Economic Planning and Development

Mr. Seegobin Bunjun

Mr. Coonjbeeharry Dwarkasingh

Mr. Raffick Osman

Mr. Jugdeo Roodurmun, M.B.E.

Mr. Hansraj Ruhee

(viii) Sugar Industry Development Fund Committee

A representative of the Minister of Agriculture and Natural Resources and the Environment—*Chairman*

A representative of the Minister of Finance

Mr. Ghunraz Beeharry

Mr. Cyril Lagesse

Mr. Raffick Osman

Mr. R. Seeruttun

Mr. E. P. G. White

(ix) Sugar Planters Mechanical Pool Corporation Board

A representative of the Minister of Agriculture and Natural Resources and the Environment—*Chairman*

A representative of the Minister of Finance

A representative of the Sugar Planters Development Fund

Mr. Ramkurrunsingh Balgobin

Mr. Nundlall Basant Rai

Mr. Sookun Gaya, O.B.E.

Mr. Gervais Mamet

APPENDIX II—*continued*

(x) Tea Development Authority

Mr. R. Jeewoolall—*Chairman*

The Permanent Secretary, Ministry of Agriculture and Natural Resources and the Environment or his representative—*Vice-Chairman*

The Principal Agricultural Officer (representing the Ministry of Agriculture and Natural Resources and the Environment)

The Registrar of Cooperative Societies

The Chairman, Tea Board

Mr. S. Lalloo (representing the Ministry of Finance)

Mr. L. Ramdin, M.B.E. (representing the Chamber of Agriculture)

Mr. D. Gungah (representative the Federation of Credit and Tea Marketing Cooperative Societies)

Mr. P. White

(xi) Agricultural Marketing Board

Mr. T. Callychurn—*Chairman*

The Chief Agricultural Officer (representing the Ministry of Agriculture and Natural Resources and the Environment)—*Vice-Chairman*

Official Members

Mr. S. Davay, Principal Finance Officer (representing the Ministry of Finance)

Mr. N. Bundhun, Administrative Officer (representing the Ministry of Commerce and Industry)

The Registrar of Cooperative Societies or his representative

Unofficial Members

Mr. L. Ramdin, M.B.E.

Mr. S. J. S. Fareed

Mr. G. Kooraram

Mr. E. Appanah

Mr. P. Maureemootoo

Mr. M. K. Ng Wong Hing

Mr. K. C. Ramgoolam

APPENDIX III

Legislation

Acts

No. 3 of 1975 ... The Sugar (Special Levy) Act 1975
No. 10 of 1975 ... The Sugar Brokerage Tax (Amendment) Act 1995
No. 14 of 1975 ... The Tea Industry Control Act 1975
No. 15 of 1975 ... The Sugar Industry Development Funds (Amendment Funds (Amendment) Act 1975
No. 17 of 1975 ... The Sack Factory (Repeal) (Amendment) Act 1975
No. 20 of 1975 ... The Sugar Industry Labour Welfare Fund (Amendment) Act 1975
No. 24 of 1975 ... The Sugar (Special Levy No. 2) Act 1975
No. 39 of 1975 ... The Sugar Planters Mechanical Pool Corporation (Amendment) Act 1975
No. 49 of 1975 ... The Sugar Insurance Fund (Amendment) Act 1975

Govt. Notices

No. 10 of 1975 ... The Mauritius Agricultural Marketing Ordinance, 1962
No. 46 of 1975 ... Order made by the Minister under Section 18 of the Sugar Industry Labour Welfare Fund Act 1974
No. 47 of 1975 ... Order made by the Minister under Section 14 of the Sugar Industry Development Funds Act 1974
No. 61 of 1975 ... The Mauritius Agricultural Marketing Ordinance, 1963
No. 62 of 1975 ... The Mauritius Agricultural Marketing Ordinance, 1963
No. 96 of 1975 .. Order made by the Minister under section 18 of the Suar Industry Labou rWelfare Fund Act 1974
No. 105 of 1975 ... Order made by the Minister under Section 14 of the Sugar Industry Labour Welfare Fund Act 1974
No. 126 of 1975 ... The Mauritius Agricultural Marketing Ordinance 1963
No. 152 of 1975 .. The Mauritius Agricultural Marketing Ordinance 1963
No. 153 of 1975 ... The Mauritius Agricultural Marketing Ordinance 1963
No. 185 of 1975 ... Notice Under Section 47 of the Sugar Insurance Fund Act 1975
No. 186 of 1975 .. The Sugar Insurance Fund Act 1974
No. 187 of 1975 ... The Pesticides Control Act 1970
No. 188 of 1975 ... The Mauritius Agricultural Marketing Ordinance 1963
No. 189 of 1975 ... The Sugar Industry Labour Welfare Fund Act 1974
No. 190 of 1975 .. The Sugar Industry Development Funds Act 1974
No. 191 of 1975 ... The Mauritius Sugar Industry Research Institute Ordinance 1953

APPENDIX IV

List of Publications and Contributions to Literature by Officers of the Agricultural Services during 1975

Name of Author	*Title of Paper*	*Name, Vol. No. Page Nos. of Periodical in which published*
A. L. Owadally; P. Oogarah; J. N. Govinden; D. Tourabally, G. M. Lallmahomed	The performance of some imported tobacco varieties in Mauritius	Revue Agricole et Sucrière de L'Ile Maurice. Vol. 54 No. 1, pp. 41-61
P. Oogarah; J. N. Govinden	Effects of two levels of N, P and K on the yield, leaf quality and gross returns of flue-cured tobacco in Mauritius	Revue Agricole et Sucrière de L'Ile Maurice. Vol. 54 No. 2, pp. 95-103
R. Brunet; S. P. Mauree	General phosphate and potash status of Sugarcane fields of small planters	Revue Agricole et Sucrière de L'Ile Maurice. Vol. 54 No. 2, pp. 104-106

APPENDIX V

Conversion Table

1 Arpent	...	1.043 acres
1 Gaulette	...	10.61 feet
1 Metric Ton	...	1,000 kilos
1 Long Ton	...	1,016 kilos
1 Pound Avoirdupois		454 grams
1 Kilo ...	...	1,000 grams
1 Hundredweight	...	50.803 kilos
1 Cord	...	92.82 cubic feet
1 Imperial Gallon	...	4.45 litres
1 Rupee	...	7.5 pence

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